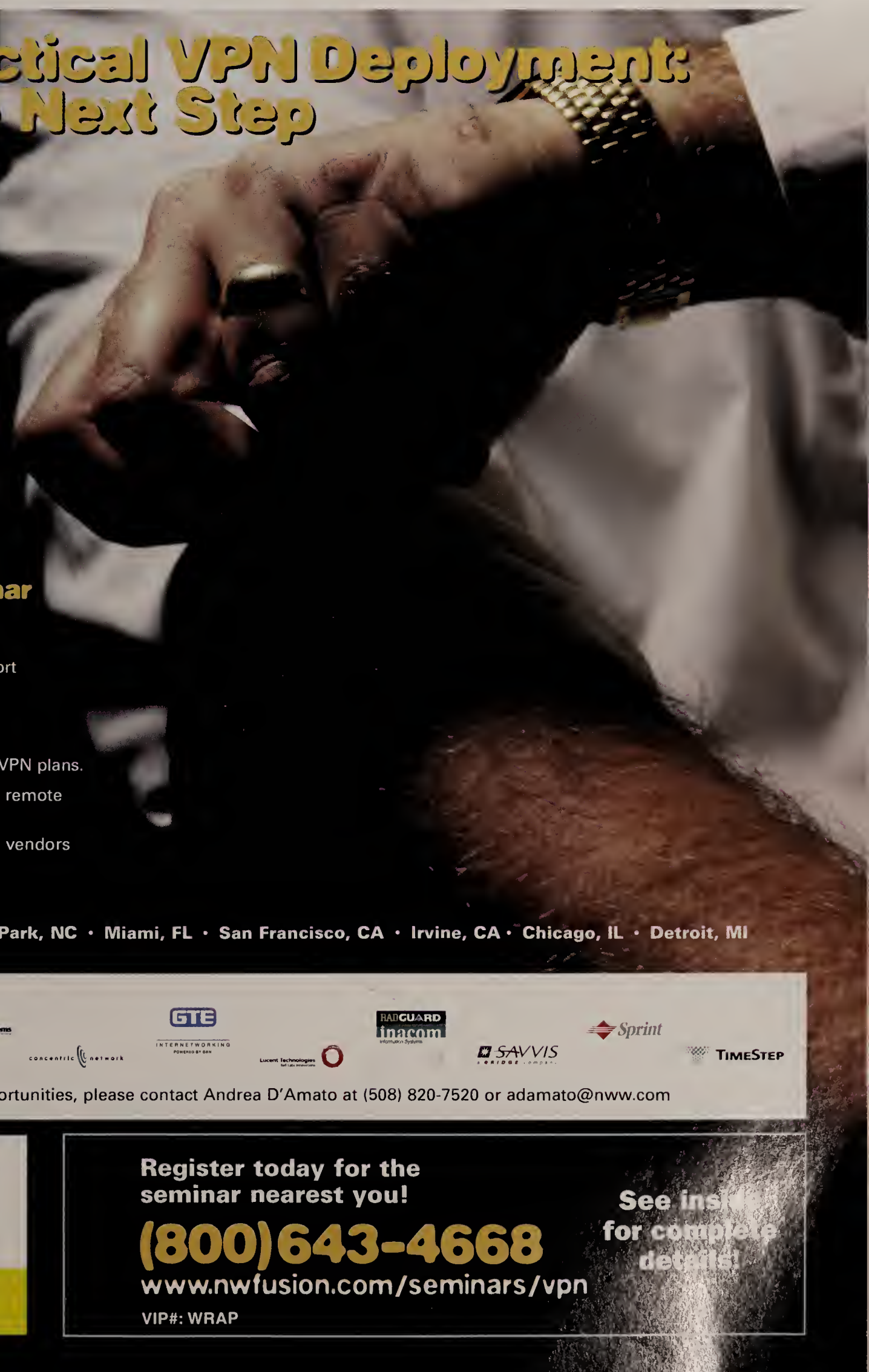
The newsweekly of enterprise network computing

NetworkWorld

August 30, 1999 Volume 16, Number 35 www.nwfusion.com

NetworkWorld TECHNICAL SEMINARS

Practical VPN Deployment: The Next Step



Practical answers to real-life questions

You know what VPNs promise: cost savings, business efficiencies and improved relationships with your partners. But once that's understood, are you prepared to deal with the technical issues of planning a full-scale VPN deployment enterprise-wide? Integration issues, scalability, site-to-site viability, security, mission-critical performance and service-level guarantees are just a few questions you should be considering.

Practical VPN Deployment: The Next Step is a one-day seminar designed to give you a clear understanding of these technical issues and how to meet them head on. Seminar director Eric Zines, Senior VPN Consultant with TeleChoice, Inc., will explore the greatest challenges of VPN deployment, and provide solutions for doing so successfully. He'll also share the success stories of early adopters, including their trials and tribulations on their way to success.

6 Reasons Not to Miss This Seminar

1. Understand the most common pitfalls in building an enterprise-class VPN, and learn to avoid them.
2. Learn how others are growing their VPN pilots to support mission-critical applications.
3. Understand how to grow your VPN to match your performance requirements.
4. Learn to integrate existing security measures with your VPN plans.
5. Understand how to deploy the different types of VPNs: remote access and site-to-site.
6. Have your key questions answered by the leading VPN vendors and service providers.

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Seminar Outline

See the Sponsor Showcase for important information on leading VPN solution providers.

TURN TO INSIDE BACK COVER

VPN Overview, Terminology and Concepts

While the definition of "VPN" is becoming clearer, the term still means different things to different people. This introductory section of the seminar will build a foundation for understanding VPNs, and describe the solutions that will be discussed throughout the day.

The Many Flavors of VPNs

- IPSec, PPTP, L2F, L2TP and MPLS VPNs

VPN Benefits and Advantages

- The Business Case for VPNs
- VPNs vs. Frame Relay
- Unique VPN Advantages

VPN Implementation Update

- Who's Using VPNs and How?
- VPN Implementation and Performance Concerns

VPN Products, Services and Solutions

Making informed choices about your VPN requires broad knowledge of the options. In this module, we will explore the wide variety of available VPN products and services, and discuss the strengths and weaknesses of each.

VPN Product Features and Configurations

- VPN Routers, Firewalls, Gateways and Appliances
- Remote Access VPN Gear
- VPN Server Software
- VPN Client Software
- Security Options
- Cryptographic Accelerators

VPN Services and Network Options

- Network Architectures
- Remote Access Service Descriptions
- Site-to-Site Services
- Extranet Options
- Value-Added Services
- Secure Hosting Services

Pricing and Support

Writing a VPN Services RFP

Do-It-Yourself VPNs vs. Outsourced VPNs

Even as the opportunities to extend the reach of your VPN grow, the question still exists of whether you should build, deploy and manage it yourself, or contract with a service provider to buy an integrated solution. In this section, we'll cover the issues that will affect your decision.

- Hardware, Software and Transmission Costs
- Management Issues
- Training Issues
- Security Concerns
- Cost Comparisons

VPN Network Integration

VPNs almost never exist in a vacuum. In fact, an overwhelming 95% of VPN implementers also have some other WAN solution in place. This section explores options for integrating existing network components into a VPN.

Integrating VPNs with Frame Relay and other WANs

- Forklift Upgrade, Phased Migration or Peaceful Coexistence?
- The Right Network for the Right Application
- Adding Remote Access to Legacy WANs

Implementing VPNs for Voice and Video

- Convergence Strategies
- Multimedia Requirements and Key Issues
- Standards and Product Solutions

Security Integration

If you have an Internet connection or a remote access solution, the chances are that you also have some type of security measures in place. Many network managers struggle with integrating these existing security functions into a new VPN framework. In this module, we'll focus on the steps necessary for preserving your security investment while expanding VPN functionality.

Authentication Solutions

- Integrating existing RADIUS with VPNs
- Implementing LDAP, PKI and Digital Certificates
- Tying Authentication to Novell and NT Directories
- Tokens and Biometrics

PPTP and IPSec

- Start Over with IPSec or Integrate with PPTP?

Firewalls and VPN functionality

- Existing Firewalls as VPN Solutions
- Firewall Upgrades
- Firewall-Based Authentication and Access Control

Mission-Critical VPNs

The requirements for a mission-critical VPN may be quite different from what is acceptable performance in an Internet connection. In this section we'll explore the requisites for "mission-critical" network performance, and discuss the technologies being deployed to improve application performance on TCP/IP networks.

All Applications are Not Created Equal

- Establishing Performance Criteria
- Estimating Bandwidth Needs
- The Implications of Multimedia VPNs
- Performance Impacts of VPN Technologies

Differentiated Services and RSVP

- Utilizing Performance-Tuning Tools
- Balancing Performance and Cost

Mission-Critical Support

- Support Staff Requirements
- Support Processes
- Implementing a Disaster Recovery Plan

Scaling VPN Pilots

Many VPN users are moving beyond the pilot phases with their VPNs to full-scale implementation. This section will look at growing a VPN from pilot to company-wide usage.

Deploying Enterprise-Scale Remote Access

- Growing Your PPTP Solution
- Migrating from PPTP to IPSec
- Specialized Products for Scalable Remote Access
- Designing a Scalable IPSec Solution
- Strategies for Streamlining User Set-Up
- Supporting Telecommuters with VPNs

Transitioning from Remote Access to Site-to-Site VPNs

- Using a Single Network for Remote Access and LAN-to-LAN
- Special Considerations for Scaling WANs

VPN Performance Guarantees

Scaling a VPN for enterprise-wide mission-critical use requires a level of confidence in the underlying network on which the VPN is built. In this seminar section, we'll look at the guarantees that are available with VPN products and services.

Network Performance Guarantees and Service Level Agreements

- Negotiating SLAs
- Standard SLAs Available Today
- Availability, Latency and Throughput Guarantees
- Mean Time to Repair
- Differentiated Services and MPLS for QoS and CoS
- Writing Internal SLAs
- Understanding the SLA Fine Print

Security Guarantees

- Bonds and Insurance Offerings
- Security Evaluation and Testing
- Training Employees

VPN Success Stories

With the overwhelming popularity of VPNs, the industry is producing many successful VPN implementers. We'll look at real-life case studies, and explore what the early adopters have done. Learn from the successes…and mistakes…of others.

Learn from the Leader

Eric Zines

TeleChoice

As a Senior VPN Consultant for TeleChoice, Eric Zines focuses on the rapidly changing VPN market. Along with tracking and interpreting trends for TeleChoice's VPDN.com Web site, Eric also provides consulting services to VPN service providers and vendors.

Prior to joining TeleChoice, Eric worked for a major carrier in a number of different roles, the last being Product Manager for Intranet Services. He also consulted with Fortune 500 customers and advised them on their intranet strategies. Eric also worked as an applications engineer on some of the first ATM switches, and network-enabled applications. Eric presented our sold-out VPN '99 seminar tour last spring, and has served as keynote speaker for numerous U.S. and international VPN seminars.

Registration Fee: $450

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Take-Home Materials

- Comprehensive Seminar Workbook, which will serve as an invaluable reference during the class and back at the office, and VPN White Paper
- Exclusive *Network World* VPN CD-ROM resource including related articles, live links, and vendor information

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SEED MONEY The venture arms of AT&T, MCI WorldCom and Lucent have been busy recently investing in commercial products. Page 31.

DISAPPEARING "INK" Start-up Disappearing, Inc. tells 'Net Buzz how to "erase" risky e-mail. Page 78.

The newsweekly of enterprise network computing

NetworkWorld

SHUT DOWN

3Com and Siemens have shuttered their LAN telephony venture.

Page 10.

August 30, 1999 Volume 16, Number 35

The network portal: www.nwfusion.com

As the heat goes on...

Net managers scramble to keep server gear cool.

BY DENI CONNNOR

Let the temperature get too high in your server room and your gear won't have a snowball's chance in . . . well, let's just say you're going to have problems.

Network professionals don't need to be reminded of this risk. However, so many server rooms have had their cooling systems pushed to the brink this summer by the nation's seemingly perpetual heat wave that many an administrator has exhausted his or her bag of room-cooling tricks (see graphic, page 77).

"We have a location in Needles, Calif., where temperatures reach 115 to 120 degrees," says Tony Fortwengler, director of IS services at Southwest Gas Corp. in Las Vegas, another notorious hot spot. "Because of that, we are more sensitive to temperature and have an IT staff person who goes to facility management meetings to make sure our company pays attention to the weather."

SPECIAL REPORT: AVOIDING the MELTDOWN

See **Heat**, page 77

CINDY CHARLES

MobilStar's David Jackson wants his servers at a constant 68 degrees.

Microsoft stalls IPv6 progress

Next-generation IP protocol backers seek out Gates.

BY CAROLYN DUFFY MARSAN

Microsoft is dragging its feet on integrating IPv6 — an upgrade to the standard Internet communications protocol — into future versions of Windows, prompting Internet leaders to launch a behind-the-scenes lobbying campaign directed at Bill Gates.

Proponents of Internet Protocol Version 6 have been working over the past month to set up a meeting between Vint Cerf, one of the creators of the Internet and honorary chairman of the IPv6 Forum, and Microsoft Chairman Gates to discuss the company's support for IPv6 in upcoming products. No date for the meeting has been set, but IPv6 supporters are hoping Cerf can convince Gates to commit his company more definitively to the upgrade.

Any extended delay in Microsoft's integration of IPv6 in Windows 2000 would be a setback for the Internet Engineering Task Force (IETF), which for six years has been working on an upgrade to the 20-year-old IPv4 protocol.

The IETF has developed and tested a core set of IPv6 standards and has established a working group to promote widespread usage of them. IPv6 offers many benefits to enterprise customers, includ-

See **IPv6**, page 16

PHOTOS (LEFT) STAN BAROUH; (BELOW) KIM KULISH

Vint Cerf, honorary chairman of the IPv6 Forum, will appeal directly to Microsoft Chairman Bill Gates in an attempt to get a firmer Microsoft commitment to the future Internet communications protocol.

More Online

- **An IPv6 audio primer.**
- **The IETF's IPv6 working group.**
- **The IPv6 Forum.**

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Dell adopts online support; Compaq soon to follow

BY DENI CONNOR

AUSTIN, TEXAS — Compaq and PeopleSoft customers will soon be able to take advantage of self-service technical support software that the vendors claim will automatically diagnose and fix problems, saving companies help desk time and money.

The move follows Dell's introduction of similar services last week.

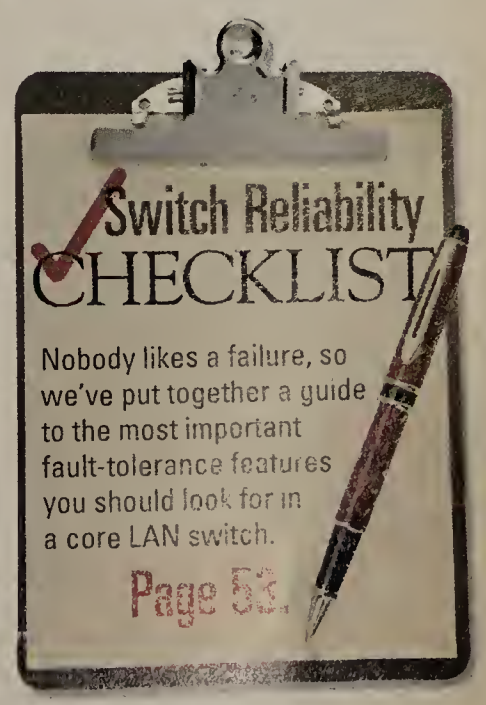
The offerings are the latest indication that so-called "e-support" services are gaining marketplace momentum. E-support is a method of communicating with employees and customers over the Internet about their computer problems. Experts say the services will enable companies to employ fewer customer support representatives.

According to International Data Corp. in Framingham, Mass., the e-support market will grow fivefold from last year's total of $1.9 billion to $10.4 billion by 2002.

"E-support software is a real boon to customer support because it automatically fixes many mundane problems and lets customer support technicians save time," says Tony Adams of Dataquest, a consultancy in Lowell, Mass.

Last week, at its first user conference in Austin, Texas,

See **Support**, page 77



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"Two and a half years ago, we took one of the most mission-critical systems in the U.S. and put it on Windows NT. It was a bold decision at the time. But it's helped us lower our cost per transaction by two-thirds. In fact, I've had a number of my peers who had gone to UNIX say that they wished they had done what we did."

Steve Randich, CIO, Chicago Stock Exchange
on choosing Microsoft Windows NT Server 4.0 over UNIX

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Okay, so it's fast, but what else, you might be asking. Well, the Minolta PageWorks 25 printer is also the most expandable printer in the sub-$1,500 category, easily upgradable from a 750-sheet paper capacity to 3,750 sheets. It features 11"x17" paper handling and even has 5- or 10-bin mailbin capabilities. Oh, and did we mention power? With its 90MHz Power PC processor with QuickPrint®, the Minolta PageWorks 25 printer pushes the envelope even further. For more information or a free CD-ROM, call 1-888-264-6658, or visit us at: **www.minoltaprinters.com**

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PC Computing — Color PageWorks PS, 5/98

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THIS WEEK ONLINE

Keeping Current.
How much would you pay for a domain name? If you could get a name for $75 that's just as good as the one somebody else is selling for $75,000, would you? Fred McClimans discusses the domain-name market and how to save bucks. **DocFinder: 4436**

Is death too kind?
The news last week that the suspected author of the Melissa virus confessed to writing it stirred some strong emotions among Network World Fusion users as to just what should be done to him (and to Microsoft for writing software he could exploit). What do you think? Jump into the discussion. **DocFinder: 4437**

Water Cooler.
Tim Berners-Lee may have invented the Web, but he didn't think up hypertext. While Berners-Lee was still in diapers, Ted Nelson was making plans for a global hypertext system. Last week, after 30 years, he released the software for his Xanadu system. Network World Online Editor Adam Gaffin takes a look at this noble failure. **DocFinder: 4438**

Vendor profiles.
Need background information on Linux vendors Red Hat Software and Caldera Systems? We've added them to our Industry/ Stocks page, which means you can get links to recent *Network World* articles about them, along with product and financial information. They're among the scores of network vendors for which you'll find profiles. **DocFinder: 4439**

How to get onto Network World Fusion
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NetworkWorld

Table of Contents

AUGUST 30, 1999

Columnist Scott Bradner says if it's true that one is known by one's enemies, look at who is fighting to force AT&T to open its cable infrastructure. Page 46.

NEWS

6 Cisco goes shopping for optical gear.

8 Hacker ruse can exploit Microsoft's ActiveX Controls.

9 Cisco targets SNA users with new router features.

10 3Com, Siemens kill joint LAN telephony venture.

12 Cabletron to unleash wireless LAN products, ISP gear.

14 Frame Relay Forum renews its purpose.

15 New tool blocks wily electronic commerce hacker tricks.

16 The Scoop: Why IPv6? Let us count the 'whys.'

INFRASTRUCTURE

17 Check Point software bolsters LAN security.

20 Wireless LAN group targets interoperability.

25 Dave Kearns: Active Directory — agree to disagree.

CARRIERS & ISPs

31 Telecommunications giants are spreading venture seeds.

38 Daniel Briere and Christine Heckart: What organized crime and convergence have in common.

ENTERPRISE APPLICATIONS

39 Sybase wares target electronic commerce world.

39 Utility helps Exchange shops track, audit e-mail use.

42 Health care group offers electronic commerce service.

46 Scott Bradner: When parallel service is not there.

TECHNOLOGY UPDATE

47 New specification will help secure LANS.

48 Gearhead: A guide to the Common Gateway Interface.

MANAGEMENT

64 Hot network skills: Unix and network integration experience will let you write your own ticket.

OPINIONS

50 Editorial: Peering into the future via a network crystal ball.

51 Blair Levin: 'Lite' regulation — Tastes terrible, awfully filling.

51 Howard Anderson: R&D breakdown is a driving force behind acquisition fever.

78 Backspin: Crazy theories and equivalent values.

78 'Net Buzz: Disappearing, Inc., pushes 'disappearing ink' for e-mail.

Net Know-It-All ..... Page 16
Ask Dr. Intranet ..... Page 47
Message Queue ..... Page 50
Editorial and advertiser indexes ..... Page 76

Special Focus

STORAGE-AREA NETS

How to cook up a SAN. Users offer their favorite recipes. Page 28.

HOW TO CONTACT US

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FEATURES

RELIABILITY CHECKLIST

A guide to the features that promote reliability and availability in a core LAN switch. **Page 53.**

George Sullivan of Northrop Grumman tests the failover capabilities in his switches on a regular basis.

Delano Technology's e-Business Interaction Suite marries e-mail and the Web. **Page 57.**

Toshiba's Magnia 7000 is an enterprise server you can grow into. **Page 59.**

For all-around security auditing, BindView's Network Security Suite bests three other programs and takes home our World Class Award. **Page 61.**

REVIEW

STEVE SHOLL

NEWS BRIEFS, AUGUST 30, 1999

Rules would roust 'cybersquatters'

The group charged with overhauling key Internet management duties last week gave its initial approval to a procedure for handling disputes over top-level domain names and Internet addresses. The Internet Corporation for Assigned Names and Numbers (ICANN) approved the procedure in a meeting of its interim board in Santiago, Chile. The procedure aims to deal with the problem of cybersquatting, where one company or individual lays claim to an Internet address — such as www.companyx.com — that another entity also claims a right to use. The approved procedure, which will be posted for public comment, prohibits "bad faith" or "abusive" attempts to lay claim to Internet addresses. It also provides a mechanism whereby Internet addresses can be cancelled or transferred when a blatant violation has taken place.

Nortel acquires Web call center firm

Nortel Networks last week bought some help in its effort to unify call centers with electronic commerce by purchasing Periphonics Corp., a maker of interactive voice response (IVR) systems. The price was $436 million in stock. Starting with classic IVR systems that direct callers to "press 1" for one thing and "press 2" for another, Periphonics has moved on to develop a platform called PeriWeb that gives companies an applications development environment to design customized transaction services for telephone-based and online commerce.

Novell's top marketer quits

For years the mantra in "NetWare Nation" has been that most of Novell's competitive difficulties — especially vs. Microsoft — can be traced to one factor: lackluster marketing. That rap has begun to fade somewhat since the arrival in 1997 of CEO Eric Schmidt and a concurrent rise in the company's financial performance. Whatever image-buffing ensues from here, however, will need to be accomplished with new marketing leadership, as Novell last week announced the resignation of Senior Vice President John Slitz. The reason? That ubiquitous and often telling "to pursue other opportunities," according to a press release from Novell.

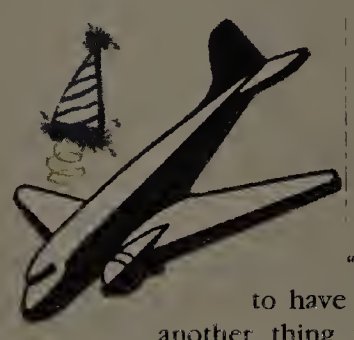
Novell's Slitz calls it quits.

Bell Atlantic keeps eye on the ball

Despite losing a bidding war for AirTouch in January, Bell Atlantic still covets the wireless carrier's holdings in the western U.S. Published reports say Bell Atlantic is angling to buy that western network from Vodafone AirTouch. Vodafone formed the company when it bought AirTouch out from under Bell Atlantic for $56 billion. If Bell Atlantic gets what it wants, the carrier will own a wireless network that stretches from coast to coast and will rival AT&T and Sprint for coverage area. Vodafone, based in London, was more interested in AirTouch's European wireless networks.

Professors taking no Y2K chances

Conventional wisdom among the technologically savvy may hold that the Year 2000 problem is overblown, but that doesn't mean they're all anxious to prove the point by being airborne on Jan. 1. In fact, a poll released last week showed that 41% of 209 computer science professors asked said they would refrain from flying on New Year's Day. The survey's author says he is not surprised. "It's one thing to have confidence; it's another thing to aviate," says Thomas Kelly, co-director of the Sienna College Research Institute of Loudonville, New York.



Netrix, OpenRoute to merge

Netrix, of Herndon, Va., and OpenRoute Networks — formerly Proteon — of Westboro, Mass., last week announced that they have signed a letter of intent to merge. Under the arrangement, Netrix shareholders will retain their shares, and each share of OpenRoute common stock will be exchanged for one share of Netrix common stock. The deal is valued at $114 million and will combine Netrix's packetized voice and data network switches with OpenRoute's Internet access routers. The merger is expected to close by year-end.

Printing for distance

Anyone who's ever been frustrated using fax machines, e-mail attachments or overnight mail to get a computer-generated document into someone else's hands may be intrigued by the idea of long-range printing over the Internet, which Microsoft and Hewlett-Packard are turning into a reality. The two companies last week said they will offer a beta version of Internet Printing Protocol (IPP) 1.0 as a native component of the third beta release of Microsoft's Windows 2000 Professional and Server operating systems. Furthermore, Windows 95, 98 and 98 Second Edition users can download a final version of the related Internet Printing Services client at http://windowsupdate.microsoft.com.

Cisco goes shopping for optical gear

BY JIM DUFFY

SAN JOSE — By plunking down $7.4 billion on two start-ups that haven't made any money, Cisco is showing its resolve to become one of the dominant telecom companies in the 21st century.

Cisco last week said it would buy privately held Cerent of Petaluma, Calif., and Monterey Networks of Richardson, Texas, for $6.9 billion and $500 million in stock, respectively. Cerent develops SONET transport products that combine add/drop multiplexing (ADM), digital cross-connect and time division multiplexing (TDM), as well as packet and cell switching. Monterey builds optical cross-connect technology that is used to increase network capacity at the core of an optical network.

By acquiring these companies, Cisco enters a business sector — optical transport — currently dominated by the old-guard telecom equipment suppliers. Optical transport will be a $10 billion market by 2002, Cisco predicts.

More importantly, Cisco now joins the ranks of Lucent, Nortel Networks and Tellabs as a supplier of SONET-based transmission gear for inter- and local exchange carrier networks. But Cisco's newly obtained technology is optimized for transport of multiservice traffic — voice, data and video — while the incumbents' equipment is tuned for voice.

The price Cisco is paying for Cerent is a steep one. Cerent lost $29 million in the first six months of 1999 on sales of $10 million. In fact, Cerent has never posted a profit since starting business in 1997.

The acquisition of Cerent is Cisco's largest ever, dwarfing the $4 billion Cisco paid for StrataCom in 1996.

But such is the price to be paid to attempt to lead in the Internet economy. Also, Cerent was about to go public just before the Cisco offer and many, including Cisco, were anticipating the company's value to skyrocket, similar to the stratospheric rise of Juniper Networks. Juniper went public three months ago and is now valued at $11 billion.

Valuations aside, Cisco now has another valuable weapon with which to battle the entrenched telecom giants for the core of service provider networks.

"It's a key piece that's been missing from Cisco. It lets them play directly against the Lucents, the Nortels and the Alcatels for a core optic offering," says Craig Johnson, principal analyst at The PITA Group in Portland, Ore. "It's key for them to really go into the regional Bell operating companies and say, 'Look, we can provide pretty much anything that Lucent and Nortel can offer.' "

Cerent has more than 100 service provider customers nationwide, including current Cisco customers Qwest and Frontier. Monterey has no announced customers.

With these acquisitions, which are expected to close at the end of October, Cisco now has 900 employees focused on optical internetworking. ◪

PROFILE: CERENT

Founded:	January 1997
Headquarters:	Petaluma, Calif.
Employees:	210
Revenue:	$10 million, first-half 1999
Investors:	Cisco, Kleiner Perkins Caufield & Byers, Michael Dell
Products:	SONET optical transport system combining TDM, ADM, cross-connect, packet and cell switching.

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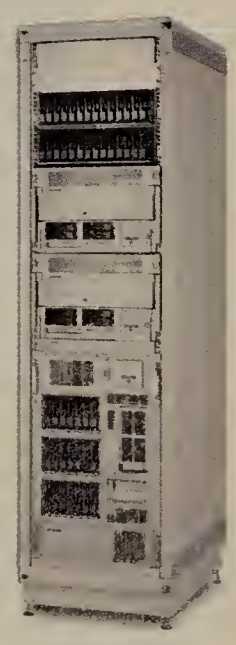

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Hacker ruse can exploit ActiveX Controls

BY ELLEN MESSMER

WASHINGTON, D.C. — If you're using Microsoft Outlook Express in Internet Explorer 5.0 for e-mail and you don't disable the ActiveX Controls feature, someone could send you a message that could wipe the files off your hard drive or put a new file onto it.

Last week Bulgarian computer consultant Georgi Guninski showed how the deceit can be done by embedding malicious script in an Internet mail message that can delete files while the victim is reading the message with Microsoft Outlook Express. This exploit takes advantage of ActiveX Controls, Microsoft's technology for executing a program on the Web, and doesn't appear to work with Internet Explorer 4.0.

"What Georgi did was create the 'nuclear e-mail message,' " claims Richard Smith, president of Cambridge, Mass., tools developer Phar Lap Software, who has kept close track of the security implications of ActiveX since Microsoft started developing the technology in the early 1990s.

"We have been anticipating something like this for years. In theory, it's no longer safe to read e-mail if you use Outlook Express," he says. "When you hear about browser exploits, think e-mail, too."

In his presentation at the Usenix security conference last week, Smith explained how Guninski's ploy works. The Outlook Express e-mail viewer reads HTML by default with Internet Explorer 5.0.

Guninski's "nuclear e-mail" takes advantage of an ActiveX Control called "Object for constructing type libraries for scriptlets," or "Scriptlet Type Lib" for short, that ships as part of Internet Explorer 5.0.

In this case, Guninski's malicious code instructs Internet Explorer 5.0's ActiveX Control to wipe out an entire hard drive if the attacker drops an executable to do so. The trick also can add files to the user's hard drive, regardless of the Microsoft browser's security settings.

"Microsoft has shipped from the factory an ActiveX Control marked 'safe for scripting,' which it shouldn't have," Smith says. For its part, Microsoft last week acknowledged the problem, although the company did not make its technical staff available to talk about it. A company spokeswoman did acknowledge the vulnerability means "you can drop an executable file into the system to do whatever you want. It could do anything."

Microsoft issued a statement advising users concerned about the problem to disable ActiveX Controls until the company releases a patch for its browser, hopefully later this week.

Guninski works as a security consultant for Netscape, which is now part of America Online. A spokeswoman there says Guninski was hired to review present and future Netscape products after discovering security problems in Netscape Communicator earlier this year. But she and Guninski denied Netscape was paying Guninski to crack Microsoft products.

The ActiveX e-mail escapade is just the latest in a long line of troubles associated with the technology, asserts Smith, who says about a dozen other ActiveX Controls written by Microsoft also need to be fixed.

Microsoft provides the tools to let others — both the good guys and the bad guys — write ActiveX Controls. Smith says he is concerned that ActiveX Controls are proliferating in a way largely unknown to users, as the Controls ship with a growing number of laptop, computer and software applications.

"These preinstalled ActiveX Controls are the ones I see as very dangerous," Smith says. "Active Controls are pretty difficult to write, and these are written by the good guys. I'm talking about Controls you never have the option not to install — I call them 'accidental Trojans.' "

For instance, the Hewlett-Packard Pavilion laptop comes with an ActiveX Control called "Launch," designed to be used with the HP "System Wizard" for system diagnostics. Smith thinks it offers a back door into the laptop.

Kodak's imaging software that ships with Windows 98 has a Control to override files. It looks like a GIF file in the directory, but it's actually an unsafe ActiveX Control, Smith contends. A Toshiba laptop Smith looked at came with about 1,000 preinstalled ActiveX Controls.

To locate ActiveX Controls, Microsoft makes a tool called OLE View, part of the Visual Studio and Visual C++ developer's kits.

Smith says that he and his colleagues have not found a large number of ActiveX Controls embedded on public Web sites, probably because of the numbers of users still running a Netscape browser, which doesn't run ActiveX, he surmises. ◪

The Upshot

A Bulgarian computer consultant has found a way to exploit one of Microsoft's ActiveX Controls so that a message sent to anyone using Microsoft Outlook Express in Internet Explorer 5.0 will be able to delete or add files to the recipient's hard drive. This latest discovery has some heralding the advent of "nuclear e-mail," with a warning to shut off the ActiveX Controls feature in the Microsoft browser.

Microsoft abandons Alpha server project

BY JOHN FONTANA

Early last week word leaked that Compaq would no longer develop Alpha-based servers that run Windows NT. Later that week Microsoft dealt Alpha the fatal NT blow by announcing that it too would no longer develop NT or NT applications that run on Alpha.

The result: Say good-bye to Windows NT and 2000 as a multiplatform system.

The moves left IT executives with a number of vexing questions. In terms of scalability, IT executives are left wondering if Windows 2000, running on the new generation of eight-way Intel-based symmetrical multiprocessing (SMP) machines, can match Alpha's scalability.

And when users look for choice, there isn't any beyond Intel. Alpha now joins MIPS and PowerPC as processors Microsoft no longer supports.

Additionally the small number of NT-on-Alpha users will eventually have to either change hardware, software or both.

"It will be costly and painful for leading-edge enterprise customers that went with Alpha," says Dan Kusnetzky, an analyst with International Data Corp. Microsoft and Compaq say they will support current Alpha customers for the foreseeable future, but no significant new products are forthcoming. Compaq will offer hardware upgrade and trade-in deals for Alpha customers.

Last week, Compaq unexpectedly ended development for Windows NT on Alpha and laid off some 100 workers. Microsoft followed with an announcement that it would not release Windows 2000 or any other Microsoft products in either 32-bit or 64-bit Alpha versions, and would cease development of 32-bit Alpha versions of SQL, Exchange and BackOffice. Microsoft will focus 64-bit development on Intel platforms.

By dropping Alpha, some believe Microsoft has lost its most powerful processor platform for running critical business applications. Those critics say Alpha can't be replaced by the eight-way SMP Intel boxes Microsoft and Compaq are giddy over.

"Microsoft will only be able to compete in the enterprise market if they have the Alpha processor," says Paul Bunn, chief technology officer of UltraBac.com, which develops backup and disaster recovery software for Windows NT on Alpha and Intel. "Microsoft and Compaq want to follow the Intel Pied Piper, but it will be a cold day in hell when an eight-way Intel system runs as well as an Alpha box."

"Only about 7% of NT users run the operating system on Alpha, but those users represent the biggest NT systems," says Kusnetzky. "Microsoft can no longer point to Alpha as the big machine for big NT jobs."

But Microsoft claims the Alpha processor does not necessarily offer better performance.

"We haven't seen an apples-to-apples comparison between Alpha and eight-way systems but we think eight-way is favorable given price and performance," says Craig Beilinson, lead product manager for Windows 2000. Along with Compaq, Microsoft is recommending eight-way servers for high-end applications. ◪

Alpha-bits

Microsoft said last week it will continue to support customers running Windows NT 4.0 on Alpha. Here is a look at what Microsoft promises to do for customers:

- Support all Windows NT 4.0 workstations and servers.
- Release Service Pack 6 for NT 4.0 for the Alpha platform.
- Provide hot fixes and Quick Fix Engineering for Microsoft's 32-bit Alpha-based products, including SQL and Exchange Server, concurrent with x86 releases as needed by customers.

Users running Windows NT 4.0 on Compaq Alphas won't be left out in the cold.

Cisco targets SNA users with new router features

BY MARC SONGINI

CHICAGO — Cisco wants to make legacy SNA networks more IP-friendly.

The company plans to add new features to its IOS routing software that will let users run SNA data more reliably over IP networks. Cisco also plans to expand its CiscoWorks Blue net management software to enable easier control and monitoring of standard SNMP-based devices from an IBM mainframe.

Cisco intends to roll out a technology called SNA Switching Services (SNASw) that will let SNA data ride on an IP net without having to first be encapsulated, says Betsy Huber, a Cisco product manager. Usually, Data Link Switching (DLSw), which encapsulates SNA in an IP packet, is required to send SNA over IP.

Huber discussed Cisco's plans at the SHARE Technical Conference in Chicago last week.

SNASw is based on IBM's Enterprise Extender software, which uses Advanced Peer-to-Peer Networking and High Performance Routing (HPR), two IBM SNA technologies said to boost the performance and reliability of SNA nets.

SNASw works by taking an SNA message and placing a hybrid SNA-IP header on it. So instead of a TCP header, the SNA data gets a User Datagram Protocol (UDP)-IP header and is sent out into an IP network.

An IP address assigned to the packet will be associated with a destination SNA address. When the packet arrives at a local SNASw router, the UDP address is stripped off and the SNA payload is delivered to its final destination.

In SNASw, HPR is used to handle a variety of functions. For example, if an error is detected, HPR will request retransmission of the packet. HPR can also detect a failure and automatically route around a failed device. Conversely, in a DLSw environment, a failed device mean lost sessions.

SNASw has received high marks from beta testers, such as MCI WorldCom. "When a session drops, you need to figure out if it was the IP layer, the DLSw layer or the SNA layer. There is also no good network management tool to correlate events between the three layers. [With SNASw] there are only two layers to break," says Laurence Kung, a senior network manager at MCI WorldCom.

SNASw will be available as part of IOS Sept. 7. Also at SHARE, Cisco demonstrated some new features for the CiscoWorks Blue Internetwork Status Monitor (ISM). ISM is Cisco's software for managing routers from a mainframe. The most interesting new feature lets ISM directly monitor and manage any SNMP device without having to go through an RS/6000 gateway, as is now required.

ISM is built upon Cisco's Native Service Point software, which also lets NetView users manage routers from the mainframe. ISM runs on IBM MVS mainframes with NetView Version 2 and later.

Cisco declined to comment, and it is unclear when the new version of ISM with SNMP support would be available.

One network manager at a large insurance company says removing the RS/6000 gateway is a big plus. Some companies that want to use their ISM mainframe capabilities for SNMP may not be able to because they lack RS/6000 skills, says the manager, who spoke on condition of anonymity. "We never considered the SNMP capabilities of the ISM via the RS/6000 because we didn't have the staff. It would have meant a bigger investment." ◪

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Cisco routers to get copper Gigabit

FlowWise's new card acts like a Layer 3 switch and offers copper and fiber Gigabit Ethernet.

BY JEFF CARUSO

SAN JOSE — Cisco users who are looking to boost routing speeds but don't want the aggravation of replacing their routers with Layer 3 switches may be interested in a new FlowWise module being announced this week.

Like FlowWise's previous module, the new RA 7000G card slides into a Cisco 7000 or 7500 router and acts like a Layer 3 switch, routing at high speeds.

The previous card stopped at Fast Ethernet; the RA 7000G has four copper Gigabit Ethernet ports, two fiber gigabit ports and four Fast Ethernet ports. The company plans to demonstrate the card at next month's NetWorld+ Interop '99 Atlanta.

Dan Markelov, president and CEO of New Age Communications, a network integrator and ISP in Pleasant Grove, Utah, says the new module will let his company add capacity to its Cisco 7000 shop without adding an entirely new box.

New Age currently has the Fast Ethernet FlowWise module and is evaluating the new card.

FlowWise claims the new module will forward packets at 3 million packet/sec, about 20 times as fast as Cisco says its Gigabit Ethernet Interface Processor runs.

FlowWise also claims that the card can forward packets at that rate even when access control lists are used. Access control lists are lists of users who have access to different network resources.

Routers consult the lists to grant or deny access to those resources. Using access control lists tends to slow down routers.

"I tried access control lists on the Cisco routers, but they're just too slow," Markelov says. He looks forward to using the lists with the upcoming FlowWise product, he says.

Network managers still have to configure the access control lists on the Cisco router, but the card learns those lists and uses them to filter traffic.

FlowWise's card requires little configuration because it learns where to route IP traffic by watching the first packet in a flow go through the router, says Randy Fardal, vice president of marketing at FlowWise.

By seeing what the router does with the packet, the module knows how to handle subsequent packets headed for the same destination. It then acts like a Layer 3 switch, forwarding packets at high speeds.

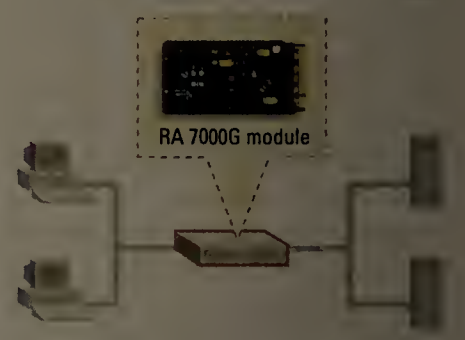
The delivery date for the RA 7000G depends on when chip maker Broadcom has copper Gigabit Ethernet chips available in quantity. Fardal says delivery is targeted for November. The card will cost $24,950.

FlowWise: www.flowwise.com

FlowWise's new module

The new FlowWise RA 7000G module for Cisco 7XXX routers:

- **Has four copper Gigabit Ethernet ports, two fiber gigabit ports and four Fast Ethernet ports.**
- **Acts like a Layer 3 switch.**
- **Forwards packets at 3 million packet/sec.**



3Com, Siemens kill joint venture

BY JIM DUFFY

FRAMINGHAM, MASS. — Less than a year into the project, 3Com and Siemens have shuttered their $100 million joint venture to develop LAN telephony products.

In a filing with the Securities and Exchange Commission, 3Com stated that an "expanded strategic relationship" with Siemens this year obviated the need for the joint venture.

"During fiscal 1999, we expanded our strategic relationship with Siemens AG to include a worldwide joint selling agreement in the large enterprise and solutions provider markets," the 10-K filing stated. "The strategic alliance may consider joint development of voice-related enterprise and carrier solutions. In light of the current strategic relationship, the two companies will not proceed with a previously announced joint venture."

3Com and Siemens have had a joint development and marketing relationship for more than two years. In October 1997, the companies announced the Carrier Scale Internetworking alliance, which also included Newbridge Networks.

The joint venture, though, was more ambitious. It was to have been co-owned and jointly staffed by Siemens and 3Com, with headquarters in the U.S. and developers in California, Massachusetts, Germany, Israel and the U.K.

The companies planned to staff the joint venture with more than 200 engineers who would have produced LAN telephony products combining 3Com's SuperStack II and CoreBuilder LAN switches with Siemen's Hicom and HiNet PBX and call-processing technology.

The products, including LAN PBXs, multimedia exchanges and gateways, would have shipped this year and into 2000.

In March, the companies named a general manager and board members for the joint venture and said plans for the joint venture were proceeding, even broadening. But last week, 3Com and Siemens officials said the joint venture would be too unwieldy for their respective convergence strategies.

"We were accomplishing what we had set out to do through the collaboration between the two engineering organizations," says Steve Cragan, 3Com director of strategic relationships. "We could continue that mode of operating and have a more efficient way of getting products to the marketplace without having to go through the overhead of creating a third corporation."

The companies still plan to develop and release the LAN telephony products that were to have been developed under the joint venture — only now 3Com and Siemens will be building them separately. The time frame for releasing the products remains largely intact, Cragan says.

Release of the SuperStack II LAN Telephony Gateway, however, has been pushed back to later this year. That product was to have shipped in the first quarter. Siemens plans to release a "major" upgrade to HiNet RC3000 call-processing software in the fall, says Hans Schwarz, senior vice president and general manager of Siemens' IP networking division.

Analysts say 3Com's $90 million purchase of packet PBX vendor NBX in March essentially killed the joint venture with Siemens.

"After they bought NBX, which was directly competitive to what supposedly Siemens and 3Com said they were going to be working on, it was like, 'Well, OK, so what is the relationship now?'" says Craig Johnson, principal at The PITA Group in Portland, Ore. "Obviously, now what it has become is nothing."

3Com and Siemens deny that. "There was never any intent to incorporate NBX into the joint venture or have it replace the joint venture," Cragan says.

More **breaking news**

Network World Fusion now has more news than ever. Check out these stories online:

Gates hedges on Windows 2000 delivery date

In a speech last week, Microsoft chief Bill Gates said he was "pretty sure" that Windows 2000 would ship this year. Echoing the company line, Gates said the No.1 priority was delivering a quality product. The Windows 2000 name seems to be making more and more sense.

DocFinder: 4440

eSuite users unclear on Lotus plans

Reports have surfaced that Lotus is killing off its much-publicized but poorly selling eSuite, a group of mini-applications designed for thin clients. Lotus customers, however, have yet to be told exactly what the eSuite vendor is up to.

DocFinder: 4441

Melissa virus author confesses

Last week the author of the Melissa virus reportedly confessed to the authorities, perhaps in an effort to avoid a prison sentence of up to 40 years.

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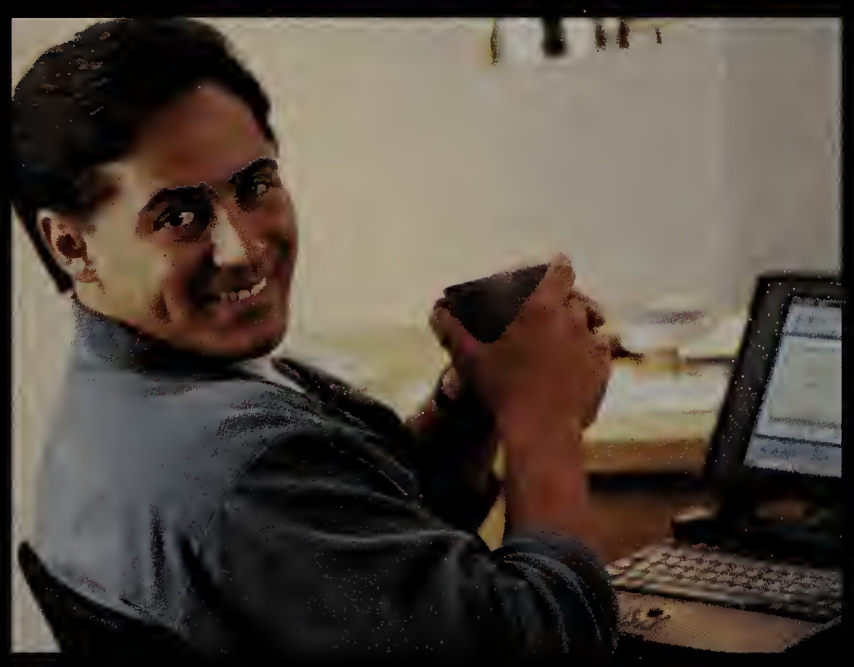

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Cabletron to unleash wireless, ISP gear

BY JIM DUFFY

ROCHESTER, N.H. — Cabletron will make two announcements at NetWorld+ Interop '99 Atlanta that could be significant to LAN managers and ISPs: new high-speed wireless products and the company's entry into the white-hot market of multigigabit routers for the Internet.

The new wireless LAN products will be an 11M bit/sec version of Cabletron's SmartSwitch RoamAbout system. That system currently consists of 2M bit/sec PC Card adapters, as well as access points — the wireless equivalent of a LAN hub — and building-to-building bridges that can connect up to 200 users more than 600 feet apart within a building or up to six miles apart between buildings.

The 11M bit/sec products will include an adapter and access point that will replace the current 2M bit/sec products. The new products will work with the existing 2M bit/sec building-to-building bridge until Cabletron replaces it with an 11M bit/sec device later this year, says Trent Waterhouse, senior technical architect for the company.

In addition to cranking up the speed, Cabletron has added some other enhancements to the new wireless gear. The devices support 128-bit Wired Equivalent Privacy encryption keys vs. the 40-bit WEP key in the 2M bit/sec offering.

Cabletron has doubled the maximum distance between an end station and access point within a building to 1,200 feet. The company also has a patent pending on its technique for powering the access point through an Ethernet cable, rather than a power outlet.

And Cabletron has lowered the price of its SmartSwitch RoamAbout offerings, from $495 to $195 for the adapter and from $1,295 to $699 for the access point. The price of the 2M bit/sec building-to-building bridge remains $2,495.

The 11M bit/sec SmartSwitch RoamAbout wireless LAN will ship in September. That's when Unicus, a Duluth, Minn., operator of cybercafes, plans to receive its upgrade. Unicus is currently using the 2M bit/sec SmartSwitch RoamAbout to connect two cafes that are about one mile apart.

"I just got to a point where I was disgusted with being dependent on a physical line," says David Anderson, vice president at Unicus. "Our first wireless loop has been up for a year, and we have had no more than a half hour of downtime."

Unicus is upgrading to 11M bit/sec because the company is becoming a wireless ISP, Anderson says. "It just gives me more available bandwidth" to offer customers, he says.

For ISPs, Cabletron will roll out what it calls a multiservice aggregation platform based on its SmartSwitch Router product. The platform will be a modular chassis that supports more than 100G bit/sec of bandwidth and more than 100 million packet/sec of forwarding performance.

For enterprise customers, this product will enable delivery of a new class of high-speed data services, such as Internet and IP telephony, and virtual private networks. For Cabletron, an enterprise player that has seen its fortunes sag of late, it will be another offering with which to attract new customers in a relatively new market for the company: service providers.

The multiservice aggregation platform will sport more than 100 ATM and packet-over-SONET ports ranging in speed from OC-3 to OC-48. It will support more than 100 T-1/T-3 links and more than 100 Gigabit Ethernet ports, as well as redundant power supplies and switching fabrics.

The product will support Differentiated Services and Multi-protocol Label Switching for quality of service and traffic engineering, respectively. For traffic priority and congestion control, the product will feature weighted fair queuing, class-based queuing, random early detection, weighted random early detection and committed access rate. It will also support policy-based routing, Waterhouse says.

The multiservice aggregation platform will compete with Cisco's 12000 Gigabit Switch Router and Juniper's M40 routers. Pricing and availability were not available at press time.

Cabletron: www.cabletron.com

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Lucent bolsters enterprise network hub wares

New Cajun line offers IP routing, Ethernet switching and scalable port density.

BY DAVID ROHDE

MURRAY HILL, N.J. — Lucent this week will attempt to dramatically step up its presence at the enterprise hub level by unveiling four new stackable Ethernet switches.

Lucent is combining the new product initiative with a big acceleration of its shift to indirect sales channels, which the company hopes will give it a better shot.

Lucent's new multilayer Cajun P330 switch family, to be announced today, allows users to stack up to 10 Ethernet boxes of either 24- or 48-port capacity each, all managed as a single device with one IP address. The company also will provide optional expansion-port uplinks to its Cajun P550 Gigabit Ethernet switch or its Cajun M770 ATM multiservice switch.

The basic model, the 24-port P333T, will offer Layer 2 Ethernet switching at a price of around $125 per port. One of the other models, the P333R, offers IP routing capability for the entire stack, even if all the other boxes in the stack are only Layer 2-capable. The two remaining models will offer expanded port density and special power protection for carrier environments, respectively (see graphic).

Slated for general availability next month, the P333T has drawn raves from initial users who have installed it over the past month. "This is almost an enterprise hub in itself at the price of a stackable," says Jarrod Wagner, network manager at Protection One, an alarm-monitoring firm in Irving, Texas.

Wagner especially likes a port-mirroring feature that enables him to use a sniffer to check all of his network's traffic even though it's a switched rather than a shared environment. "Port mirroring enables you to see everything that's going through the port," Wagner says. With two P333Ts on the stack so far, Wagner is also considering installing a P333R to add routing capability and conserve processing power in his stand-alone routers.

Analysts note many similarities between the P330 series and Cisco's recently announced Catalyst 3500 XL LAN switch line (*NW,* May 31, page 21). For example, both product lines will support Gigabit Interface Converter-based Gigabit Ethernet ports for users who want to run Gigabit Ethernet traffic over either copper or fiber.

On paper, the 24- and 48-port Lucent products double the Catalyst family's port density of 12 and 24 ports, but the analysts say they aren't too impressed with that. "Who really needs such high density on a stackable beats me," says Michael Speyer, assistant director of network solutions at The Yankee Group, a consulting firm based in Boston.

What's more important to Speyer is the fact that Lucent is spreading the word that it will make the new stackables widely available to some new sales channels. Lucent officials say they will push the Cajun P330 series through many of the same distributors and value-added resellers (VAR) that currently offer the Pipeline and SuperPipe remote-access routers originated by Ascend Communications, Lucent's most important recent acquisition.

Until recently, Lucent has attempted to sell data products by using its direct-sales PBX user base. That strategy wasn't working too well, according to Speyer.

"Products like these don't necessarily get sold direct. They need to go through VAR channels," Speyer says. "To the extent that Lucent is getting its VAR channels sorted out, the more you're going to see these products in the marketplace."

The P333T will be available next month at a price of $2,995. The P333R with integrated IP routing will be available in the fourth quarter for $5,495.

Lucent: www.lucent.com/dns

New stackables for the wiring closet

Lucent's Cajun P330 family of stackable switches includes:

Model	Description	Additional features
P333T	24 10/100 ports standard	Optional expansion slot for 16 additional 10/100 ports*
P333T-DC	Same standard and optional port offerings as P333T	Adds 48-volt DC power supply for carrier central offices
P334T	48 10/100 ports standard	Optional expansion slot for 16 additional 10/100 ports*
P333R	Same standard and optional port offerings as P333T	Adds ASIC-based IP routing capability

* Expansion slot can also be used for one or two Gigabit Ethernet ports.

SOURCE: LUCENT, MURRAY HILL, N.J.

Frame Relay Forum renews its purpose

BY TIM GREENE

The Frame Relay Forum has set itself a new goal: to clarify its stance on quality of service (QoS).

Rather than shut down the forum's technical committee, as some industry observers thought they should, forum members voted to bolster the committee and spell out how to preserve QoS across frame relay gear made by different vendors.

Members voiced that desire in response to a survey conducted earlier this month prompted by the group's technical committee chairman, who questioned whether the forum should abandon its technical work altogether (*NW,* May 31, 1998, page 1).

Members say specifications outlining how to implement QoS over frame relay networks are scattered among formal Frame Relay Forum technical specifications and lack cohesion, according to forum President Lori Dreher.

QoS is a valuable tool for supporting service-level agreements that service providers offer to customers. The forum is made up of about 150 service providers and makers of frame relay gear.

While it cannot set standards, the forum does issue what it calls "implementation agreements," which bridge the gap between frame relay standards set by the International Telecommunication Union (ITU) and specifications that vendors need to make interoperable frame relay gear.

Without a clear statement on QoS, it is difficult for vendors to make equipment that conforms to QoS policies set by other vendors' gear. The QoS issue could be cleared up with something as simple as a white paper that pulls together in one place the QoS references that are scattered among the forum's implementation agreements, Dreher says.

The forum might also decide that it is worth a separate implementation agreement just to deal with QoS, she says.

In addition to working on QoS, forum members say they want the committee to write specifications on interworking frame relay with a particular ATM service quality known as available bit rate. Such interworking is important to maintaining QoS when traffic crosses between frame relay and ATM networks.

Members also want to determine how frame relay should interwork with IP, again to address QoS issues. Members rejected the idea of widening the focus of the forum from frame relay to include broadband protocols in general.

Technical work is clearly what members want the forum to focus on, Dreher says. Other priorities include educational programs, market research and public demonstrations of frame relay technology.

One of the frustrations voiced last spring by technical committee Chairman Doug O'Leary was that the forum had become difficult and time-consuming to reach consensus on implementation agreements.

To address that concern, the forum has agreed to change the structure of its committee meetings. During the first day of meetings, small groups of members who are intensely interested in a specific proposal will meet to discuss it. They will then report their progress to the full committee later during the meeting.

That will replace the procedure of discussing all business in front of the whole group, which is more time-consuming, Dreher says. The new format will be tried out at the committee's scheduled meeting in October.

Frame Relay Forum: www.frforum.com

A refreshed Frame Relay Forum

After some public soul searching, the Frame Relay Forum has a renewed focus. The group wants to:

- Clarify its stance on how to guarantee quality of service over frame relay networks.
- Establish specifications for interworking frame relay and ATM available bit rate quality of service.
- Streamline the work of its technical committee to get work done faster.

New tool blocks wily e-comm hacker tricks

BY ELLEN MESSMER

MOUNTAIN VIEW, CALIF. — Think your electronic commerce site is safe from hackers?

A little demonstration from start-up Perfecto Technologies might convince you otherwise.

Company co-founder Eran Reshef sat down at this reporter's PC, logged on to an e-commerce site and, using only the browser, changed the price of an item by modifying the site's HTML.

A similar demo for Quote.com exposed security holes and lead Quote.com to buy AppShield, a tool Perfecto designed to bullet-proof e-commerce sites.

Reshef came up with the idea for AppShield with his partner, Gil Raanan. Both honed their computer skills as officers with Israeli secret intelligence.

AppShield is an HTTP proxy filter that sits in front of a Web-based e-commerce application. It keep crooks out by refusing to process any bogus character inputs, such as long Common Gateway Interface buffer overflows, that can hijack the server.

Clean cookies

AppShield also blocks a trick called "cookie poisoning," in which an attacker alters his Web cookie after he's logged on with a password and ID. This is important because many Web sites rely on a cookie to keep a state of connection with the e-commerce user after authentication. Once altered, the trickster can take on another identity and use someone else's account, for example.

AppShield can also prevent hackers from changing prices on items added to e-commerce shopping carts, something that can be surprisingly easy to do with the HTML tools that are part of the Netscape and Microsoft browsers.

Officially shipping this week, AppShield is already winning plaudits from beta testers who have had the chance to kick its tires for a few months.

"We have evidence of the fact that it can work," says Kaj Pedersen, vice president of engineering at Quote.com, a Web site that provides stock quotes, news, research and portfolio management for investors. Pedersen found out about Quote.com's security holes after Perfecto employees hacked the company's Web site in two or three different ways right in front of him.

Page watching

To prevent break-ins, AppShield analyzes every page generated by the Web server every time it is requested, but before the page gets to the browser. The process adds about 20 milliseconds to the browser-server communication, Reshef says.

AppShield's policy recognition engine expects an application page to be returned as it originated, and AppShield filters out illegal character inputs. If the software senses trouble, AppShield notifies the e-commerce manager through an e-mail or pager alert. The software can also give the would-be Web hacker an error code response or other message.

In general, preventing hacker exploits requires the e-commerce application to be rigorously designed and reviewed by security experts. But this is a luxury not all e-commerce operations can afford.

Instead, e-commerce sites are often rushed into production for competitive reasons. But Perfecto's founders think their application security proxy can protect sites that have not been designed with such rigor.

"This is for brokerages, airline companies, phone companies, retailers, financial institutions and online pharmacies," Rashef says. "It's for newspapers, analysts and TV stations."

AppShield, which costs $20,000, will be just the first product from Perfecto. Reshef says the start-up plans to announce other security tools in the next few months.

Perfecto: www.perfectotech.com

PROFILE: PERFECTO TECHNOLOGIES

START-UP

Based:	Mountain View, Calif.
Founded:	1997 by Gil Raanan and Eran Reshef
Employees:	40
Funding:	$17.5 million from Intel, Sequoia Capital, others
Product:	AppShield, a Web application security product

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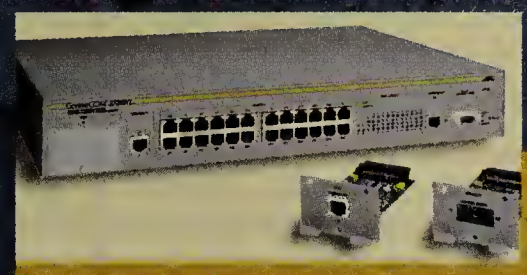

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NWInfoXpress #71 @ www.networkworld.com/infoxpress

IPv6,
continued from page 1

ing a significant increase in the number of IP addresses they can reserve, as well as easier administration and tighter security (see story, right.)

Microsoft is a member of the IPv6 Forum, a group of 50 companies that was formed in July to foster adoption of the new standard. Additionally, a Microsoft employee — Tony Hain — is one of three co-chairs of the IETF IP Next Generation Transition Working Group. But despite this show of support, the company has not yet agreed to integrate IPv6 into its products, particularly Windows 2000. Currently, Microsoft offers an IPv6 protocol stack for Windows NT that can be downloaded from the company's Web site, but the stack is for experimental, rather than production, use.

CINDY CHARLES

Microsoft's Gates is being targeted by influential proponents of IPv6.

"There is no official support yet from Microsoft Corp. for IPv6," says Alain Durand, another chair of the IP Next Generation Transition Working Group and a research engineer at IMAG in Grenoble, France. "From my understanding, IPv6 is not a priority for Windows 2000."

Microsoft takes a stand

Microsoft didn't do much to dispel that notion in a statement issued to *Network World* last week.

"Microsoft has made significant investments in exploring this technology," the company says. "However, due to the experimental nature of IPv6, Microsoft will not support it in Windows 2000, but will continue to solicit customer feedback and explore implementations in future versions of Windows."

The implications extend beyond Microsoft products, according to another IETF official.

"For IPv6 to be rolled out in the Internet as we know it today, it requires a wide availability of products, such as Cisco routers, Sun workstations and Microsoft servers and workstations to support IPv6," says Bob Fink, the third co-chair of the working group. "This way systems administrators and network administrators won't have to make a decision about running IPv4 or IPv6. They can simply run both, so the transition can happen naturally.

"To date, we have strong commitments from Sun and Cisco," Fink continues. "But from Microsoft, we have meritorious efforts by the research [side of the company], but no firm commitments on the product side and no information about the status of the work and when it might be done. We certainly believe it is essential to the industry that Microsoft support this effort."

Durand would like to see Microsoft integrate an IPv6 protocol stack within Windows, so everyone who buys a PC running Windows will automatically receive the new standard. He says this type of integration is necessary for production use of IPv6.

"What we would like is some kind of commitment from Microsoft, to have Microsoft say that they are really going to support IPv6 and that we would see a product in a year or so," Durand says. He is "confident" Microsoft will do so once customer demand picks up, he says.

IPv6 is already supported in IBM's AIX operating system and in various flavors of Linux. Meanwhile, Trumpet Software International of Australia is shipping an IPv6 protocol stack for Windows 95, 98 and NT systems.

Still, Microsoft's lack of support "is a problem, because most of the machines that we have now on the Internet are PCs running Windows," Durand says.

Demand is the key

Reluctant to paint Microsoft as the heavy, Cerf says the IPv6 transition is also being slowed by "a lack of strong incentive for software and hardware vendors to prepare for it. Customers are not yet pressing the matter."

"However, the rapid growth of the Internet outside the U.S. and the entry of large quantities of IP-requiring end devices — such as cell phones, personal digital assistants and Internet-enabled televisions — may be key to such demand," he adds.

In related news, the first production IPv6 addresses were issued in recent weeks.

The first organization to receive a production IPv6 address was the Energy Sciences Network.

The first commercial IPv6 addresses were made available last week by Internet Initiative Japan, one of the largest ISPs in Japan. ◪

Be a
Net Know-It-All
For the answer to this week's question and more net trivia, visit Network World Fusion and enter 2467 in the DocFinder box.

This week's question:

In which of the Big Five accounting firms did Cisco recently invest $1 billion?

www.nwfusion.com

The Scoop
The news behind the news

WHY THE PUSH FOR SUPPORT OF IPV6?

Internet Protocol Version 6 resolves a number of problems that have plagued the current IPv4 standard, most significantly the rapidly depleting number of unique Internet addresses available today.

IPv6 supports 128-bit addresses, while IPv4 supports 32-bit addresses. IPv6 can support a virtually unlimited number of Internet addresses, while IPv4 only supports a few billion. The extra addresses offered by IPv6 are important for the development of Internet devices, such as phones and television set-top boxes, which will each require a unique address in order to be accessed over the 'Net.

Other benefits of IPv6 for enterprise customers include:

- Automatic configuration of IPv6 hosts. This feature will mean less staff effort and time required to operate an IP-based network.
- The ability to change ISPs without disruption of service, via router renumbering and neighbor discovery protocols.
- End-to-end security without network address translators, which can cause security breaches.

IPv6 also offers built-in multicast and differentiated levels of service, two features that were recently added to IPv4.

— Carolyn Duffy Marsan

Corrections

In our recent review of network monitoring and alerting software (*NW*, Aug. 23, page 56), we should have stated that pricing for WatchDog 3.6 from Tessler's Nifty Tools starts at $695 each for WatchDog-IP and WatchDog-Modem.

On page 57 of this issue, Delano Technology's full company name was inadvertently omitted from the deck of the review of the company's e-Business Interaction Suite.

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Infrastructure

TCP/IP, LAN/WAN Switches, Routers, Hubs, Access Devices, Clients, Servers, Operating Systems, VPNs, Networked Storage

Briefs

Encanto Networks last week announced a Web server for remote and branch offices that supports connections to high-bandwidth Internet and LAN services. Encanto's Model 410 Web Server was designed for offices with 10 or fewer PCs that have no local IT support. The server includes a four-port Ethernet hub for LAN connectivity to frame relay or T-1 networks, a separate Ethernet port for 'Net access via digital subscriber line or cable modem technology, and a built-in firewall. The package comes bundled with Encanto's e-commerce, payment and publishing software. The dedicated hardware/software offering sells for $1,695 and will be available Sept. 1.

Encanto also sells Web servers that support Internet access via 56K bit/sec dial-up lines and ISDN lines.

Encanto: www.encanto.com

BMC Software has rebranded its storage management and recovery products, spun them off into their own business unit and outlined a roadmap for future storage product development. The company will focus the attention of its fourth business unit on recovery management and enterprise storage management, and taking on responsibility for existing storage products. The new unit will pull in about $1 billion worth of business by 2002, the firm claims.

BMC has rebranded many products, including its Enterprise Storage Management products for Windows NT, Unix, NetWare, AS/400 and OS/390, under the moniker Resolve. BMC will also be enhancing its product lines over the next 12 to 18 months to include the ability to autodiscover and map storage objects and let users control storage configurations from a single management console.

BMC: www.bmc.com

Check Point software bolsters LAN security

BY TIM GREENE

REDWOOD CITY, CALIF. — Check Point this week will introduce software that protects servers from unauthorized users within corporate LANs and across public networks.

VPN-1 SecureClient and SecureServer bring Check Point's existing firewall and policy-based security to desktops and central application servers. SecureClient also extends these same protections to remote users who dial in to corporate networks.

"This new software lets enterprises protect individual applications. It's a logical architecture," says Abner Germanow, an analyst at International Data Corp. in Framingham, Mass.

With SecureServer software installed on a Windows NT server, network administrators can use a firewall to protect the applications from unauthorized users on the LAN as well as those dialing in via an Internet virtual private network (VPN).

The new products, a new VPN reporting system and upgrades of Check Point's VPN-1/Firewall-1 software are part of the company's Secure Virtual Network architecture. The architecture extends firewall and encryption support from any network workstation or server to any other workstation or server in an enterprise net.

The new release of VPN-1/Firewall-1 software lets users link VPN-1 server gateways for backup. For example, the software enables a backup VPN-1 server to take over for another failed server, keeping individual VPN sessions alive so remote users are unaware of the failure. The servers involved would synchronize the exchange of encryption keys in order to keep the session going without interruption.

Bringing VPN protection to the LAN

Check Point announces VPN-1 SecureClient and SecureServer software.

- SecureClient functions as a remote access client as well as a corporate desktop client.
- Software provides firewall protection to individual LAN devices.
- SecureServer protects LAN servers from unauthorized employees.

The upgraded software also backs up VPN-1 servers when they are located at different corporate sites. So if a remote user has dialed in to one VPN-1 server and it fails, the remote user's VPN-1 client software will automatically try to access a backup server located at another corporate site. In this case, though, the client's VPN session is dropped and the client would have to establish a new session with the second server.

In order for the remote user to access the same VPN resources, the two sites must be networked by some other means besides the failed VPN server — such as a dedicated line or frame relay link.

Check Point is also expanding the number of companies whose public-key infrastructures (PKI) it will support. Formerly Check Point supported just Entrust, but the list has expanded to include Netscape, Baltimore Technologies, GTE, IBM, Microsoft, Security Dynamics, Spyrus and VeriSign.

All of the companies have agreed to support an open PKI defined by Check Point, but interoperability with the other vendors' gear has yet to be certified, Check Point says.

Once compatibility has been achieved, Check Point customers will find it easier to set up VPNs with business partners who use VPN gear made by other vendors, Check Point says.

"To do VPNs properly on a large scale, you need to be able to exchange digital certificates in a variety of places," Germanow says.

Check Point is also adding reporting software that can generate reports based on the logging data gathered by the VPN-1 software. Check Point Reporting System runs on Windows NT or Solaris workstations.

The software lets network executives plan VPN capacity by monitoring and assessing actual use, the company says.

The capability is long overdue, IDC's Germanow says: "They were in dire need of this."

Pricing for VPN-1/Firewall-1 starts at $3,495. VPN-1 Secure Client costs $50 per client, and Secure Server costs $895 per server. All are available now.

Check Point: www.checkpoint.com

Expand gear boosts T-1 throughput

Accelerator uses compression to improve bandwidth utilization.

BY TIM GREENE

NEW YORK — Expand Networks, a privately funded start-up, is introducing a compression device that the company says saves money by boosting potential throughput on a T-1 over fourfold.

Accelerator 4000 boosts potential T-1 throughput.

The firm's Accelerator 4000 takes WAN traffic from a router and compresses it using technology that Expand calls adaptive acceleration. It then drops the traffic onto a WAN link.

"We've seen 300% to 400% improvement in performance consistently," says Chuck Farner, director of information technology for Wyle Electronics, a semiconductor distributor in Irvine, Calif., that has been using the device.

Expand says the device was designed for companies that have a need for more bandwidth but want to minimize the number of new data lines they have to buy. For many users, that means they could save the most money on the most expensive links: international dedicated circuits.

Accelerator 4000 analyzes traffic as it passes through the device from a router to a T-1 line. The box identifies different types of packets by looking at traffic headers

See **Expand**, page 20

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Left to right: Compaq AlphaServer, Compaq ProLiant, Compaq NonStop Himalaya

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Wireless LAN group targets interoperability

BY JOHN COX

A new industry group of wireless LAN vendors is taking a novel approach to the market: The group is admitting there's a problem that blocks corporate acceptance of multivendor wireless networks.

The problem is that wireless Ethernet products rarely work with each other, and the issue is expected to get even worse as vendors race to bring out new products based on the soon-to-be-finalized IEEE 802.11 High Rate Direct Sequence standard. This new standard uses the 2.4 GHz radio band and runs at 11M bit/sec, which is five to 10 times faster than existing proprietary wireless nets.

The Wireless Ethernet Compatibility Alliance (WECA), which officially made its debut last week, wants to change all that. The group will craft a set of interoperability tests and hire an independent test lab to administer the tests. Products that pass the tests will be branded with an Alliance mark.

Wireless nets have been widely deployed in certain industries. Overnight shippers, car rental agencies, warehousing operations and discount shopping chains all rely on handheld devices and bar code scanners linked via a radio connection to servers on LANs.

Wireless alliance

Wireless Ethernet Compatibility Alliance members at NetWorld+Interop '99 Atlanta will unveil details about how they will test wireless Ethernet products to guarantee interoperability.

Founding WECA members:

- 3Com
- Aironet
- Intersil (formerly Harris Semiconductor)
- Lucent
- Nokia
- Symbol Technologies

"But outside vertical markets, wireless was not ready for the general enterprise market," says David Cohen, product manager for 3Com's wireless LAN group.

"The key is [the new IEEE standard that creates] wireless LANs operating at speeds equal to or even greater than wired Ethernet," says Phil Belanger, WECA's chairman. "There's been a much more positive response from enterprise net managers to these higher bandwidths."

Wireless nets consist of a radio interface card that runs in the client device and an "access point" or receiver-transmitter that attaches to the backbone. WECA's interoperability testing will ensure that a corporate customer could buy a mix of these products from different vendors and be certain they'll work together.

The WECA tests will also address another issue: ensuring that a user moving through a warehouse and having to switch from one access point to another, for example, will be able to do so smoothly, even if different brands are used. The IEEE standard has only a sketchy definition of this roaming connection.

"We feel, based on preliminary discussions with our technical committee, that we will be able to do a successful transition between different vendors' access points," Belanger says.

At NetWorld+Interop '99 Atlanta next month, WECA will disclose some of the technical details of the tests, along with the naming the testing lab, the unveiling of a more complete Web site and the announcement of additional members.

The IEEE is expected to give final approval to the 802.11 standard in November, Belanger says.

WECA: www.wirelessethernet.org

Prestolite tunes cabling for Fast Ethernet

Company's TrueNet system ensures maximum throughput across the LAN.

BY JIM DUFFY

A new cabling system from a Midwest company may solve LAN throughput problems that heretofore were undetectable by network managers.

Prestolite Wire of Southfield, Mich., has unveiled a cabling system for 100Base-T LANs designed to prevent bandwidth and data loss over Category 5 unshielded twisted pair (UTP) wiring.

Full performance

The cabling system, called TrueNet, was developed to ensure that users upgrading from 10Base-T to 100Base-T get the full performance of the tenfold increase in bandwidth they expect.

TrueNet consists of horizontal cable, patch cable, jacks and patch panels for connecting clients to servers. TrueNet is designed to protect Ethernet signals from impedance problems that sap performance and cause data loss.

Mismatch

For instance, if there's an impedance mismatch on the cabling between the client network interface card and the patch panel, and the patch panel and server NIC, throughput could drop off dramatically because frames would be dropped and have to be retransmitted.

If 1% of data needed to be retransmitted, the data rate on a 100M bit/sec link would drop to 20M bit/sec, a decrease of 80%, according to Prestolite.

Standards organizations have allowed a +/- 15 ohm variation in the impedance differential between Category 5 UTP cord and horizontal cabling. Prestolite has decreased that differential to +/- 3 ohms.

The result, company officials say, is improved impedance matching between patch cords and horizontal cabling, resulting in less data being retransmitted. Lower retransmission means higher data rates.

Bandwidth threat

When frame retransmissions are required due to lost Ethernet frame data, network bandwidth takes a hit. Having properly matched cabling and patch panel equipment can reduce frame data loss.

Maximum percent of retransmissions on network	Data rate (in M bit/sec)
0%	100
1%	20
2%	4
3%	.8
4%	.16
5%	.032

SOURCE: PRESTOLITE WIRE CORP., SOUTHFIELD, MICH.

Performance guarantee

Indeed, Prestolite is offering a five-year guarantee of zero bit error performance on its TrueNet structured wiring products.

"There are a lot of customers who aren't really aware of the issues they have with their cabling infrastructure," says Esmeralda Silva, a LAN analyst at International Data Corp. in Framingham, Mass. "If there's a tool that allows you to bring Category 5 cabling up to spec, it's valuable to the end user."

Prestolite developed TrueNet in conjunction with Krone, a German company that develops cabling systems for high-speed data networks.

TrueNet costs about $65 per node and is available now.

Prestolite: www.prestolite wire.com

Expand,
continued from page 17

and payloads.

The box then applies compression algorithms to each packet type to minimize the size of the packets before they are sent out onto the T-1.

The Accelerator 4000 is programmed to recognize certain types of packets, such as PPP or IP, but it can also analyze traffic such as AppleTalk, according to Expand President Talmon Macro.

After the box analyzes the traffic from a site, Accelerator 4000 modifies the algorithms to achieve maximum compression for the traffic mix at that particular site. During use, the performance of the box improves over time as the Accelerator 4000 adapts to the traffic patterns. The more traffic that goes through the box, the faster the traffic reaches maximum throughput, Macro says.

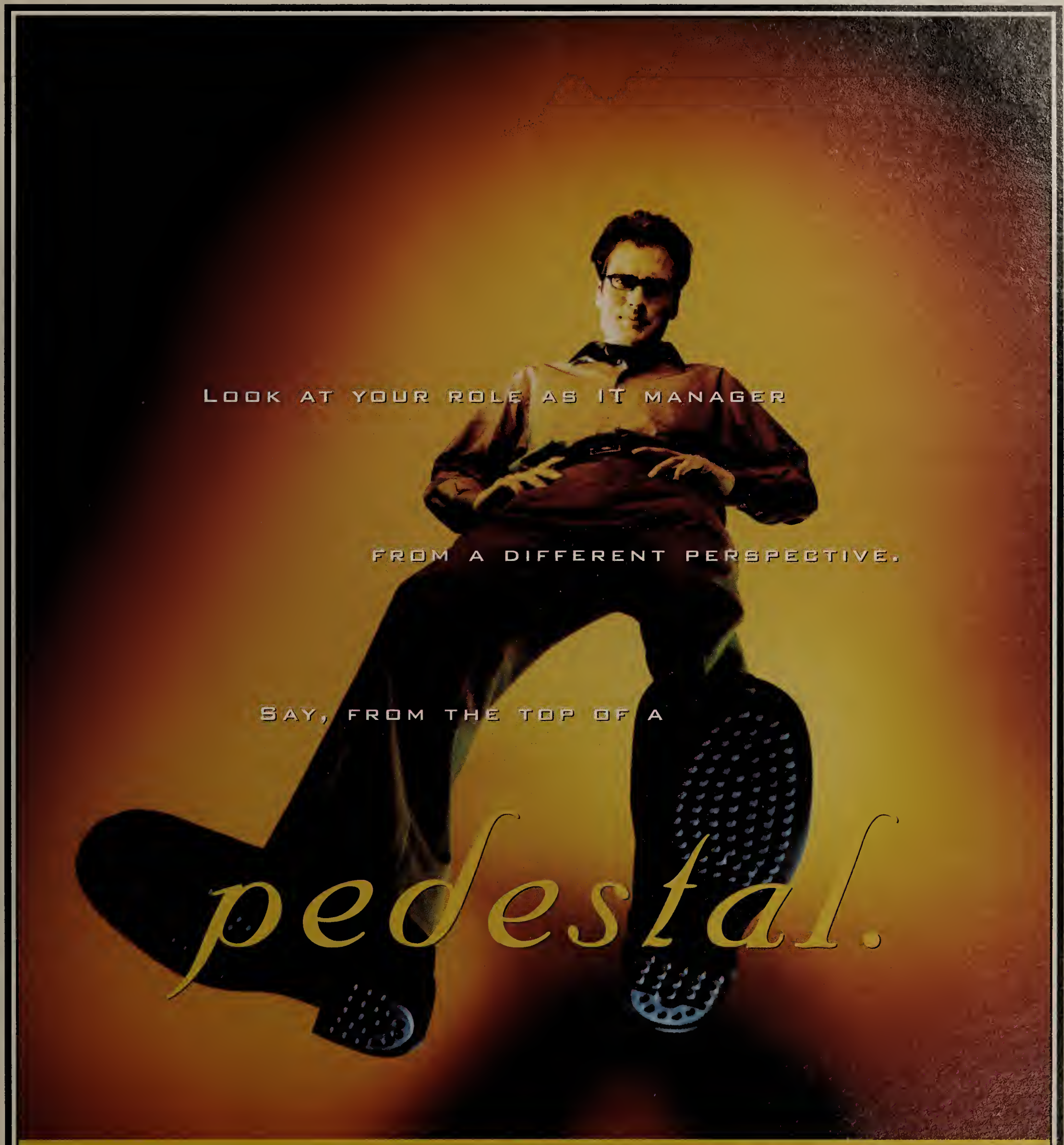
If the mix of traffic from the site changes, Accelerator 4000 readjusts to maximize compression, he says.

The device must be used in pairs, with one at each end of a connection. All the information the receiving Accelerator 4000 needs to decompress packets is included in the compressed packet.

Expand was founded in 1988. The company has 50 employees and research and development facilities in Israel.

Accelerator 4000 is available now for $50,000 per pair. The company is working on versions for frame relay, T-3 and OC-3 lines.

Expand: www.expand.com



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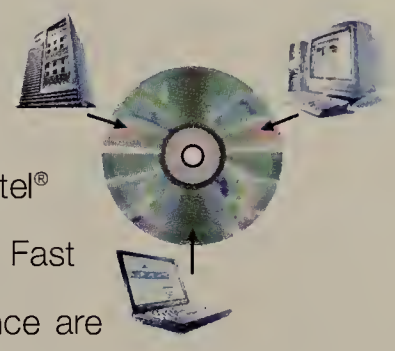

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Wired Windows
Dave Kearns

ACTIVE DIRECTORY: AGREE TO DISAGREE

There was a fair amount of fallout from my column "A flaw in Active Directory?" (Aug. 16, page 28). But, most people agreed with my assessment of potential problems with Microsoft's Active Directory replication and synchronization strategy.

[Aside: For the user at Microsoft, whose name may be Shawn but signs his e-mail "LCA Dude" and who uses a host machine called tide70.microsoft.com — you need to learn how to create truly anonymous e-mail. At least when employees at Novell or IBM disagree with me, they sign their real names.]

I did spend an enjoyable hour talking to Pete Houston, Active Directory's lead product manager. Houston came to Microsoft from IBM and has a very solid grounding in databases. In particular, he appears quite knowledgeable about distributed, replicated databases.

There was very little we disagreed on but, alas, the item that was the focus of my last column was at the top of the list.

When changes are propagated throughout the replicas of the directory, it's important that they be applied to all copies in the same order. Active Directory uses a serial number sequence to decide the order of changes and when there's a discrepancy, falls back on a number of so-called tiebreaker decision points to decide which changes will be made and which will be rejected.

Houston and I agree that consistency among all copies of the directory is important. We differ in that Houston believes consistency is all that matters, while I believe that consistency is important, but accuracy is almost as important.

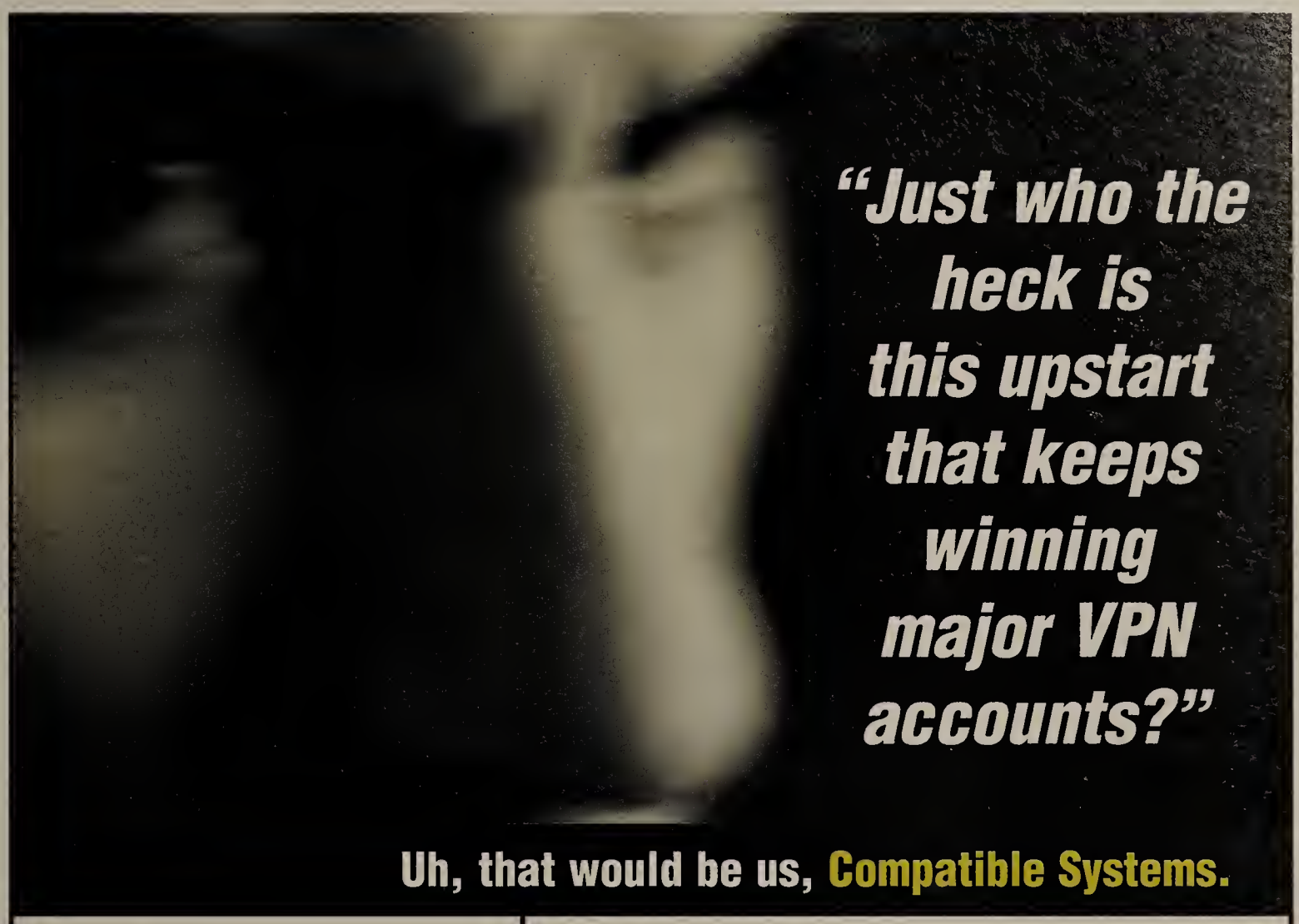
It's a classic confrontation between a database manager and a network manager. We agreed to disagree.

We went on, though, to imagine the next generation of directory service — a generation that would use rules and policies to determine which update succeeds and which doesn't. Imagine setting up a hierarchy so that anytime there is a discrepancy in updates, the higher ranking person's changes would "win." I'd like to hear your thoughts on how that might work.

Get Kearns' free Windows NT newsletter via e-mail twice a week. Go to www.nwfusion.com/focus/index.html and sign up for the latest NT news.

Tip of The Week

While Novell and Microsoft provide methods to back up their directory services, they can be very awkward to use. Most backup applications fail to back up the links and references between objects; should you need to restore, this could lead to many manual entries having to be made. There's only one third-party directory backup product: Future Gate's DeTroubler. It's a useful tool for anyone using directory services (www.future-gate.com).



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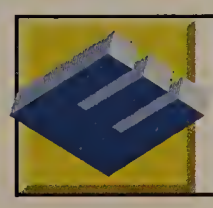

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How to cook up a storage-area network

BY DENI CONNOR

STORAGE-AREA NETWORKS

Users offer favorite recipes for properly implementing SANs.

Storage-area networks (SAN) are being adopted more frequently today, but uncertainty still exists among users about why to install them and the applications that can make the best use of them.

SANs are high-speed networks, similar to LANs, that connect disk subsystems directly to servers or clients. The idea is to relieve network congestion or bypass distance limitations imposed by traditional SCSI storage connections.

Fibre Channel-based SANs can be configured in several ways and for any number of reasons (see graphic). They can be installed as Fibre Channel Arbitrated Loops (FCAL) or switched fabric networks. They can be local or remote, spanning campuses and using wide-area connections.

Methods for implementing SANs may differ, but most network professionals offer the same recipe from one installation to another: start small and think globally. They recommend implementing small, simple FCAL or switched fabric networks to share data among servers.

"You need to approach SANs with a broader plan than simply dropping in [more storage] and seeing if it is going to be successful," says Lee Congdon, senior vice president of strategic integration and architecture for NASD in New York. NASD is the parent company of the NASDAQ stock exchange.

"You need to plan not only where you are today, but where you want to be tomorrow and then consciously choose the applications that work in the context of a bigger picture," Congdon adds.

Look to your apps

Congdon and other users say to look at your applications to determine which applications warrant adding a SAN and which will do just as well on server-attached RAID. They say to begin with a small, low-impact or low-budget application, such as consolidating several servers to the same storage device, before moving to full-blown implementation. From this application, users can test the "proof of concept," and then grow the SAN to involve more of the routine tasks of the data infrastructure. For example, data replication and creating multiple active copies of data that would increase utilization or ease maintenance and testing operations.

Users also recommend dividing applications into categories based on importance. For mission-critical application data, users need to design in redundancy and fault tolerance with duplicated storage, switches and host bus adapters, so there is no single point of failure.

For example, at NASD, Congdon has several Sequent NUMA servers running Unix connected via a Fibre Channel switch to a single EMC Symmetrix disk subsystem; Dwight Gibbs, chief technical fool at The Motley Fool, connects Windows NT servers via a hub to a Compaq StorageWorks disk array; and Bruce Covey of Home Depot in Smyrna, Ga., connects numerous Macintosh workstations to Avid video editing storage via a Fibre Channel hub.

Prepare for future

Not surprisingly, users have implemented SANs in different ways, but most are preparing for future growth.

For example, Congdon's switched fabric SAN will be able to easily expand as he adds more applications. The Motley Fool and Home Depot use FCAL and will need to migrate to a switched fabric architecture before they can add any more servers, clients or applications to their SANs.

Users agree, though, that relying on a systems vendor or integrator for your first SAN implementation is the wise route.

Gibbs says you should also expect your vendor to guarantee interoperability between Fibre Channel and SCSI devices.

"I want a 60- to 90-day money-back guarantee. If it works, I'll keep it. If not, I want to return it. So far, I have not run into a situation where we just couldn't make something work," Gibbs says.

While Congdon generally agrees with Gibbs, he takes vendor participation a step further. He thinks that it is reasonable to choose a vendor to implement a limited package. He adds that it is unlikely a vendor would be able to completely understand business applications and where a midsize to large business is going.

Congdon and Gibbs also believe the plan for a data infrastructure closely parallels the network and systems infrastructure. Blending the three into a single cohesive network is necessary to the planning. That way, storage becomes another infrastructure resource that users can manage. This strategy also helps ensure network, applications and other groups in the enterprise network environment interoperate.

Successful SAN implementation also depends in large part on getting the approval of management, says Steve Rigney, a consultant with NetReference in Sterling, Va.

For example, Congdon's SAN is just the start of a much larger SAN implementation that management has approved and provided the funds for. He wouldn't have the SAN if he hadn't convinced people of the cost savings and benefits of centralized storage solutions over stovepipe storage growth.

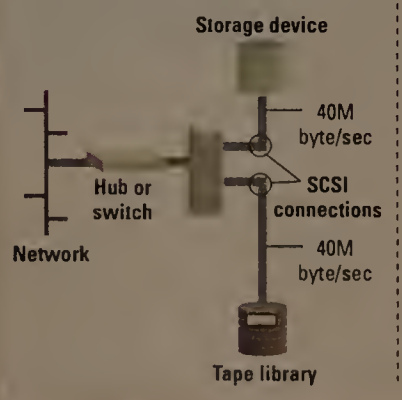
"Ensuring that you get a properly funded program and a disciplined investment plan rather than budgeting in fits and starts is important," Congdon says. "You don't want the first application to have to bear all the cost. You need to think about planning for this, investing in it, and then allocating the cost back to the business across multiple applications." ◪

Fitting in Fibre Channel

Here are some details about the common storage-area network technologies.

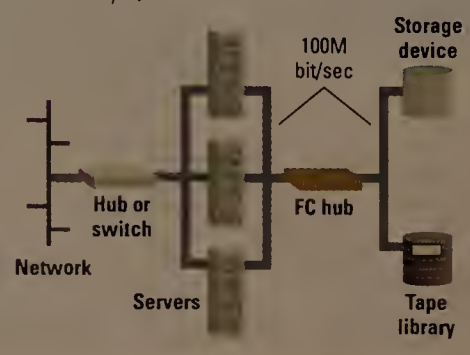
SCSI

- Supports only 16 devices per controller.
- 80M byte/sec transfer rate.
- Limited to a distance of 70 feet between devices.



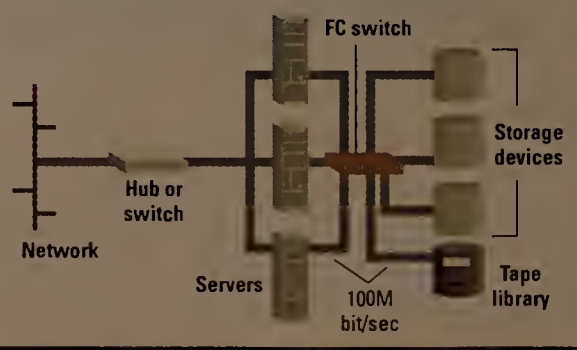
Fiber Channel Arbitrated Loop

- For small SANs with little growth potential.
- Good for single low-impact application.
- Easily supports multiple workgroup environments.
- Supports up to 126 devices per loop.
- 100M byte/sec transfer rate.



Switched fabric

- Highly scalable.
- Can support multiple mission-critical applications.
- Good for large data center environments.
- Provides equal access to stored data through switch.
- 100M byte/sec transfer rate.
- Overall distance of 32,810 feet between devices.



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Briefs

PSINet last week announced plans to acquire **Transaction Network Services** in a deal worth $720 million. PSINet is expected to hand over $351 million in cash, and the rest will be made up of stock. Transaction Network Services is one of the largest point-of-sale (POS) service providers. As more and more merchants go online, the need to partner with an IP network service provider such as PSINet has become more important to Transaction Network Services. PSINet has a global IP network and Transaction Network Services has customers that want to transition their POS services onto the 'Net.

PSINet: www.psi.net; Transaction Network: www.tnsi.com

Corio, an application service provider in Redwood City, Calif., last week named George Kadifa the company's new president and CEO. Kadifa was most recently a senior vice president at Oracle. Kadifa replaces Jonathan Lee, founder and now former president and CEO. Lee will work closely with his successor as the company's chief strategy officer.

Corio: www.corio.com

DSLnetworks last week announced that it now sells digital subscriber line (DSL) services in 30 markets across the U.S. The company says its coverage is larger than any other DSL carrier's. That may be because it uses other carriers to set up the DSL lines. These include major DSL specialists Covad Communications, NorthPoint, Rhythms and Network Access Systems, as well as Pacific Bell. DSLnetworks sells DSL at speeds from 128K bit/sec to 7M bit/sec, and can link customers to the Internet or virtual private networks.

DSLnetworks: www.dslnetworks.com

Telecom giants spreading venture seeds

AT&T, MCI WorldCom and Lucent backing scores of networking start-ups.

BY CAROLYN DUFFY MARSAN

With venture capital investments in network start-ups at record levels, the nation's largest telecommunications companies are looking for a piece of the action.

The venture arms of AT&T, MCI WorldCom and Lucent have all ramped up their investment activities this year, and much of the money is going to commercialize products and services for enterprise customers.

"Every major technology company now has some sort of venture capital operation," explains Kirk Walden, national director of venture capital research at PricewaterhouseCoopers. "They're all looking to make direct equity investments in emerging companies. Some cynics call that outsourcing research and development, but I don't have any problem with it. It's a way of bringing innovation to the market faster."

Following in the footsteps of active investors such as Intel and Microsoft, these three telecommunications companies together have invested $740 million in more than 100 network companies.

Among the enterprise-oriented technologies being targeted with investment dollars are digital subscriber line (DSL) services, Web-based customer support, virtual private network (VPN) equipment and telecommuting applications.

DSL, in particular, appears to be benefiting from investments by these three sources. Recipients include: Covad Communications, a Santa Clara, Calif., provider of DSL services; Rhythms, an Englewood, Colo., provider of DSL-based telecommuting services; and Jetstream Communications, a Los Gatos, Calif., manufacturer of voice gateways for DSL.

See **Venture**, page 34

Investing in tomorrow's networks

A breakdown of the venture arms of three leading telecom companies.

Name	AT&T Ventures	Lucent Venture Partners	MCI WorldCom Fund
Year founded	1992	1998	1998
Investment strategy	Early-stage, $1M-$5M, 5-7 years, active investor	Early-stage, $.5M-$5M, active investor	Later-stage, $5M to $10M, active investor
Investments outstanding	$365M, 70 companies	$75M, 19 companies	$300M, 24 companies
Target markets	Wireless, Internet value-added networking, content, local services	Optical networking, data networking, communications semiconductors, wireless	Broadband access, next-generation, networks, enhanced communications software, services
Enterprise portfolio	Avesta Technologies Onsite Access Covad Communications VeriSign First Virtual	Convergenet Manage.Com Octane Software	Rhythms NetConnections. Jetstream Communication Indus River WebLine Communications
Web site	www.attventures.com	www.lucent.com	www.mciworldcom.com

PSINet offering secure customer service tools

BY DENISE PAPPALARDO

HERNDON, VA. — PSINet is padlocking its new customer service Web site by deploying a public-key infrastructure (PKI) system that offers business users a secure method of viewing and changing their account information over the 'Net.

The ISP is rolling out Xcert's PKI Sentry CA 3.6 technology to protect its Secure Online Support Center Web site, which houses sensitive customer account data. PSINet will issue Xcert digital certificates to authenticate customers who log on to access information about their accounts, submit trouble tickets or review IP address data.

PSINet is one of the first ISPs to install its own PKI system, says Eric Hemmendinger, an analyst at Aberdeen Group, a consulting firm in Cambridge, Mass. The handful of other ISPs that have announced digital certificate and PKI support are using third-party digital certificate authorities, such as Entrust or VeriSign, Hemmendinger says.

The PSINet-issued digital certificates are essentially electronic identifiers based on public keys that are unique to each customer. Before issuing the certificates, users have to complete a form specifying which accounts that user needs to access. Once PSINet verifies each user's form, it will issue a digital certificate along with instructions on how the certificate needs to be installed on a user's Web browser.

Today, PSINet's Secure Online Support Center lets users look at their accounts and change contact information as well as submit trouble tickets. PSINet is planning to add capabilities this year that will let users make changes to their Domain Name System.

PSINet has many financial and federal government customers that cannot have account information sent over the Internet without protection, says Mike Hatalla, manager of customer support engineering at PSINet.

PSINet also plans to use the PKI system and digital certificates to make other services more secure, Hatalla says. Services such as e-mail application hosting and managed virtual private network offerings can benefit from stronger encryption and user and network authentication, he says. But the company is still evaluating how it can expand PKI capabilities to other services.

Senior editor Tim Greene contributed to this story.

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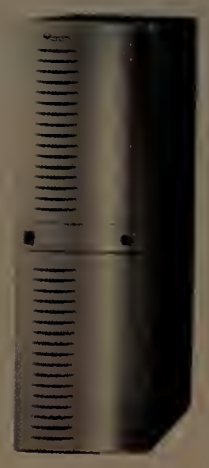

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Venture,
continued from page 31

Both Covad and Rhythms went public this year.

"Part of the reason DSL technology has grown so rapidly is because of its access to the capital markets," says Susan Mayer, president of the MCI fund. Mayer says broadband access technologies such as DSL are one of three target areas for the MCI WorldCom Fund. The other two are next-generation Internet technologies and enhanced communications services.

By investing in emerging companies, the telecommunications giants are looking to get an edge with technologies that will enable future products for enterprise customers as well as new applications that will drive traffic to their networks. Often the financial investments are accompanied by strategic partnerships.

"We're not just looking for financial returns. We're also looking for good strategic fits or companies that fill gaps in our product line," says John Hanley, managing general partner of Lucent Venture Partners.

Hanley says Lucent's venture activity is part of a larger effort to cut the time it takes for a product to move from the drawing board to the manufacturing line. "We've cut our cycle time by about 50% in the last three years," he says. The venture activity is "one way to find technologies that will be important in three or four years."

Like Lucent, the MCI WorldCom Fund is looking for strategic relationships as well as strong financial returns from its investments. That's why the fund was attractive to WebLine Communications, a Burlington, Mass., provider of Internet customer service software that had its choice of investors when it raised $10 million in early August. WebLine officials say they selected the MCI WorldCom Venture Fund because they viewed MCI as a strategic partner.

"MCI was already a WebLine customer before they came to us about a corporate investment," says Bob Weinberger, vice president of marketing at WebLine. "Money is really a secondary benefit in a situation like this."

AT&T Ventures, on the other hand, is more interested in pure financial returns than in complementing AT&T's product lines.

"We view ourselves not as a business development function but as a group trying to affiliate with the best companies in emerging technologies," says Neal Douglas, general partner with AT&T Ventures. "We're invested very broadly in IT from semiconductors to cable content, from terabit routers to city guides, from Internet security to Internet payment systems."

Both AT&T and Lucent are investing in start-ups that don't have products yet. MCI WorldCom, on the other hand, is targeting existing companies but giving them more money.

Regardless of the approach, all three funds have a major focus on enterprise customers.

"Typically, the best application of technology where there's a viable payback model is addressing the business customer," Douglas says. "For example, we're investing in equipment that helps carriers provide better managed services to their enterprise customers."

Other areas that AT&T Ventures is focused on include technologies that bring high-speed, cost-effective bandwidth to enterprise customers as well as technologies that drive electronic commerce, such as payment systems. ◪

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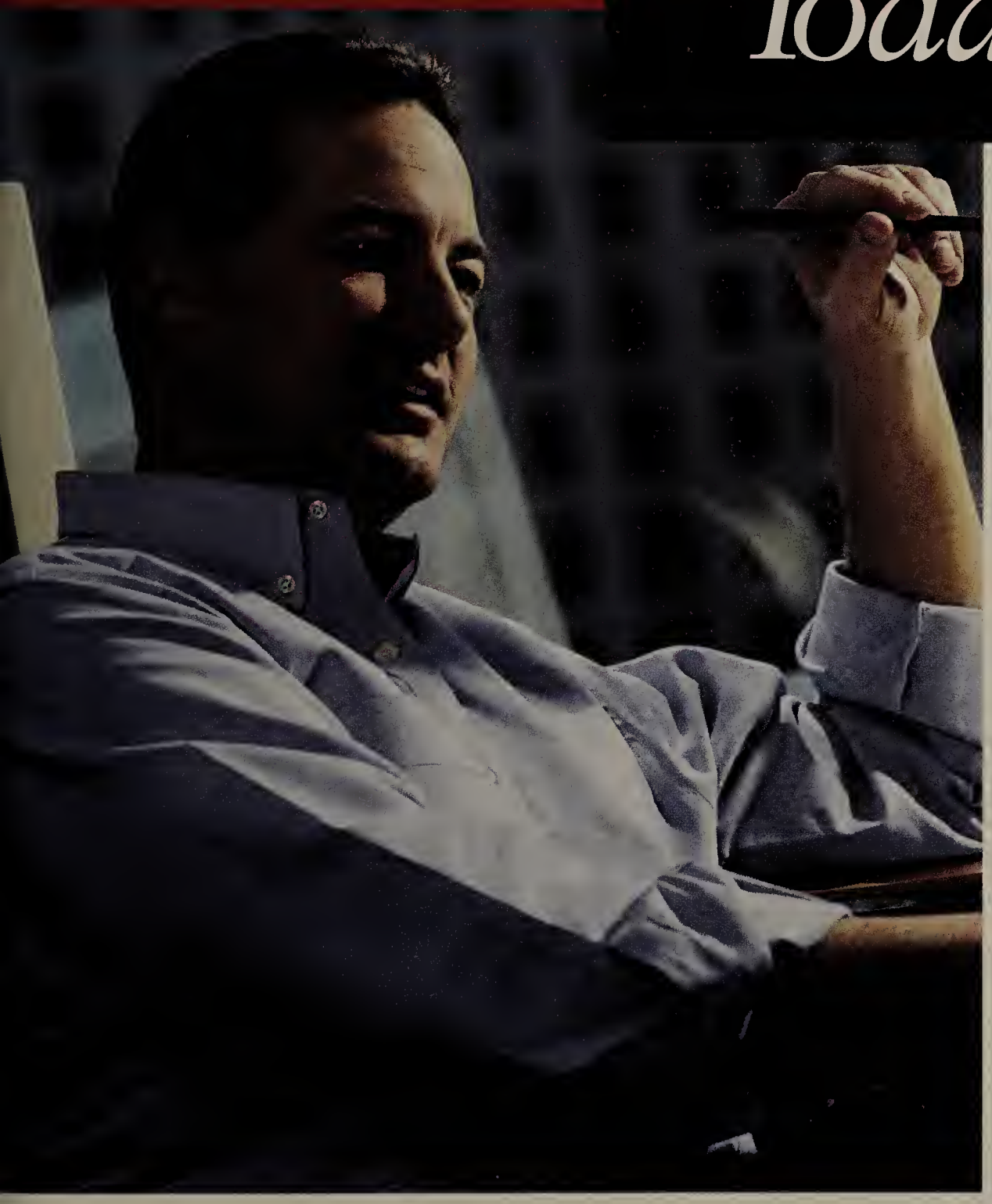

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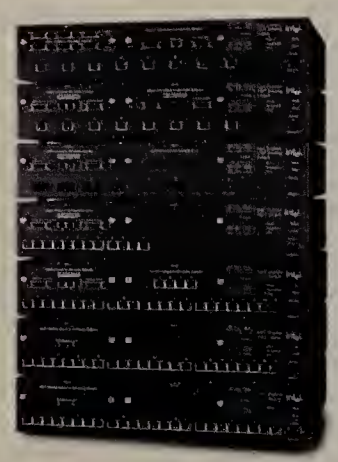

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Wan Monitor . Daniel Briere and Christine Heckart

WHAT ORGANIZED CRIME AND CONVERGENCE HAVE IN COMMON

"Convergence will save you money."

"Convergence will reduce time spent on network management."

"Voice over data delivers . . . blah, blah, blah."

Boring. If you've talked to any equipment vendors or service providers in the past 12 months, you've probably heard this stuff dozens of times. These reasons for convergence may be valid; however, the real reason is *power*.

Think of convergence like Tony "Scarface" Montana would. As Tony says, "In this country, you gotta make the money first. When you get the money, you get the power. When you get the power, you get the woman." For convergence, this becomes: "In this company, you gotta get the data first. When you get the data, you get the voice. When you get the voice, you get the power."

A war is brewing inside corporations. Most companies have telecom staffs separated along the lines of voice and data. Convergence is blurring these lines and presents an opportunity for one of these groups to expand into the other's territory — not only to get a piece of the action, but also to take control. You become the big boss; you control the agenda.

You must make the first move, and here's why: If you don't, the voice group might.

How do you make your move? You can't simply go into a meeting and say, "I think we should move our voice network to the data network, and I will be the head of the combined department."

We asked our convergence hit man, Tom Jenkins, for his advice:

First, skim fax traffic to the data network. Fax machines can easily be categorized as "data" equipment because they digitize information, don't transmit voice and are seen as being replaced by e-mail (although the latter is not true). Fax usually accounts for 40% of a company's "voice" communications costs.

Then rake off the voice mail and other non-real-time voice components. Once again, because this information is stored before being delivered to users, it can be viewed as being similar to e-mail, which is also stored and non-real-time.

Now it's time to siphon off the internal voice traffic to the data network. Usually this requires nothing more than a new gateway device (and some incremental bandwidth) at each of the sites you decide to convert to voice over data. The justification is obviously the economic one your equipment vendors are always emphasizing. Let them help you with the business case.

Finally, if you want it, you can make a deal with a service provider that can transport your external voice traffic via its data network with a connection to the public switched telephone network for termination to any location around the globe.

So now you're the don of the company network. Better watch you're back, though. Remember, Scarface did not survive the movie.

Briere is president and Heckart is vice president of TeleChoice, a consultancy in Boston. They can be reached at dbriere@telechoice.com and checkart@telechoice.com.

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Enterprise Applications

Intranets, Messaging/Groupware, E-commerce, Security, Network Management, Directories

Briefs

BMC Software last week announced management software for SAP's Business Information Warehouse (BW) database software. BMC Patrol for BW measures the response time of end-user queries to the database and tells the administrator which queries are most often used. The software is shipping for $760, and it runs on Windows NT and several variations of Unix.

BMC: www.bmc.com

Mirapoint, in Cupertino, Calif., will announce this week sharp price cuts for its dedicated IP-based messaging servers and two new offerings aimed at smaller businesses and remote offices. Mirapoint's Enterprise 210, 220 and 230 models are designed for 300, 600 and 1,000 users, respectively. Prices range from $9,995 to $20,995. Mirapoint's products are designed and optimized for e-mail services. The products support SMTP, POP3 and IMAP4 messaging standards and offer a host of security features, including Secure Sockets Layer and SSH encryption and Kerberos support.

Mirapoint: www.mirapoint.com

Globalware Computing last week shipped Pylon ServerSync 2.5 Gold, which allows custom Notes databases to be distributed simultaneously to multiple users of 3Com's PalmPilot. ServerSync lets users roll out Palm devices using a single server and keep both dial-up and network-connected handheld users fully synchronized with corporate Notes databases, mail, contact lists and calendars. The software runs as a Domino 5.0 "add-in task" to consolidate administration and security, and is integrated with Globalware's PylonPro, which translates custom Notes databases into Palm applications. The software, available at www.globalware.com, is priced at $1,195 per server.

Sybase wares target e-comm world

BY JOHN COX
AND JUAN CARLOS PÉREZ

Sybase last week announced several new, upgraded products and outlined a plan to sell software to customers who want to link new Web applications with existing enterprise network systems.

Sybase is betting that big customers want software vendors to help them bridge the gap between relatively simple Web documents and forms and existing back-end transaction systems.

Sybase CEO John Chen says the company's products — databases, application servers and development tools — will supply the elements to create and connect both ends of these systems.

Focusing on an emerging, high-growth market makes sense for Sybase, which has traditionally been a player in the now-mature database market, says Tom Koulopoulos, president of Delphi Group, a consultancy in Boston.

The Sybase products announced last week include:

- Adaptive Server Enterprise 12.0. New features in this database upgrade include Java support, in the form of an integrated Java Virtual Machine; more XML support for tasks such as storage and querying; and server failover support, Sybase says. The product is scheduled to ship in October or November, and pricing will be announced at that time.
- Enterprise Event Broker. This new middleware product is part of the company's EnterpriseConnect family and is designed to capture, transform and deliver

See **Sybase**, page 44

More Online

- **Product details from Sybase.**
- **An article outlining Sybase's e-comm strategy.**
- **Download white papers about Sybase's enterprise applications.**

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Utility helps Exchange shops track, audit e-mail use

BY JOHN FONTANA

With e-mail quickly becoming as indispensable to enterprise net customers as the telephone, MicroData Group thinks tools to track the use of messaging should be as sophisticated as those for the phone.

To make that point, the consulting firm is jumping into the software business with the release of Microsoft Exchange Log Import Agent (MELIA). The tool lets customers track messages sent and received by Exchange based on user, department or a host of other parameters. Administrators also can track peak traffic times and the size of messages and attachments. The software comes with nearly 50 report templates for extracting data about message flows in Exchange.

MELIA is designed to help organizations that need to account for e-mail usage, such as law firms and others that bill on time. But it also provides users with an accurate audit trail for correspondence, especially over the Internet.

"IT groups, business units and users alike are interested in more granular controls to bill back for e-mail usage," says Matt Cain, an analyst with Meta Group in Stamford, Conn. "MicroData really is addressing a need in the client market. This data has always been in Exchange, but it's been difficult to get at." Cain says the MELIA software also can be used to identify improper use of e-mail, such as chain-letter distribution.

MELIA includes an agent that exports Exchange's log data to a Microsoft Access or SQL database. From there, the reports are used to mine the data. The program also supports Access and Seagate's Crystal Reports for generating custom report templates.

MELIA's automated agent gathers data at set intervals mandated by an administrator. The software runs on a Windows 9X or NT administrative workstation and can monitor any number of Exchange servers.

"Businesses routinely log phone calls not only for billing purposes but as a record of who called who," says Paul Parisi, president of MicroData in Topsfield, Mass. Parisi says he installed Exchange for one customer who was then surprised to learn he had no way of knowing who was sending what where. "MELIA helps administrators understand how their systems are used."

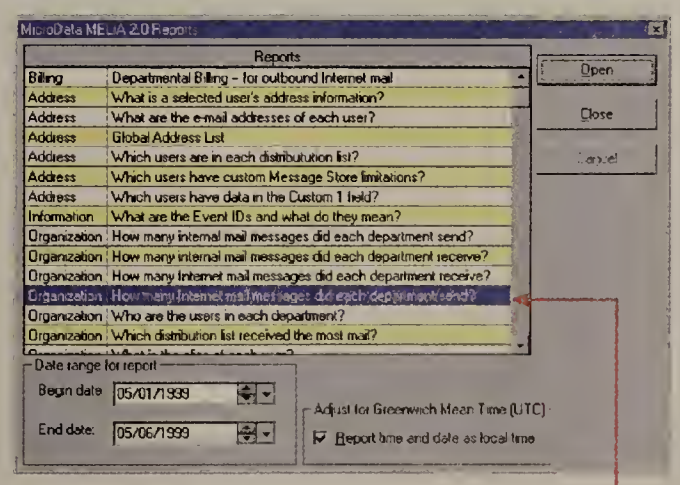
Because MELIA tracks e-mail based on address only and does not scan for content, MicroData is developing a companion tool that will provide content reporting. MicroData also may release MELIA versions for other e-mail packages.

MELIA is available now; pricing starts at $495 per server.

MicroData: www.microdata.com

E-mail audit

MicroData Group recently released Microsoft Exchange Log Import Agent (MELIA) for tracking and auditing usage and traffic patterns in Microsoft Exchange. The software includes a number of reports that run against data gathered from Exchange.



After importing Exchange tracking logs into a database, users can select from a number of MELIA reports to run against the data.

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Health care group offers e-commerce service

BY ELLEN MESSMER

RESTON, VA. — The National Wholesale Druggist Association, the trade industry for the five dozen middleman health care product distributors that buy from manufacturers, has launched an electronic commerce service for its members.

Called Healthcom, the Web-based service is intended to help NWDA's mostly smaller distributors gain advantages the six largest NWDA members have enjoyed for years by using electronic data interchange with manufacturers.

EDI lets larger distributors send electronic purchase orders or get new pricing information virtually instantaneously by receiving the manufacturers' electronic catalog documents in ANSI 832 EDI format over value-added networks (VAN).

The smaller wholesalers, often without the financial or technical wherewithal to use EDI, are still dependent on paper-based communications such as fax or mail to communicate with manufacturers about new pricing information or place purchase orders, says David Rogers, NWDA's general manager of services.

"They've even been using Western Union mailgrams, which are expensive," says Rogers, who organized the new Healthcom e-commerce service to offer an alternative to paper-based exchange.

The manufacturers are used to sending out EDI 832 electronic catalogs for price updates to the handful of NWDA members that use EDI. Now one of the main VANs serving the health care products industry, Sterling Commerce, will also get a copy of catalog information. Sterling's role is to publish new catalog entries in Web format on NWDA's Healthcom portal maintained at Sterling's Web site, www.commerceweb forms.com.

In this scenario, every manufacturer will send every wholesaler an e-mail alerting them to new product information, Rogers says. "The distributors can then go into the password-protected site to take action on the information."

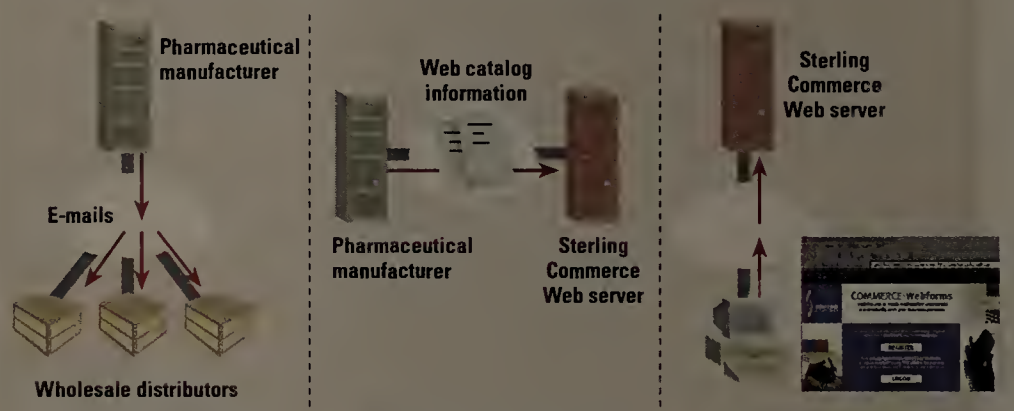
The Healthcom service, set to start next month, is expected to be offered to wholesalers on a flat subscription basis of $39.95 per month.

The average profit margin in the wholesale industry is small — just 1.51%, which is "even worse than the grocery industry," Rogers says.

The speed the smaller wholesalers will gain through Healthcom to learn about price increases could work to boost their bottom line. If they get news about manufacturer price increases and act on them even one day in advance, they would save tens of thousands of dollars on each order, Rogers says.

Keeping up with the big guys

How the Healthcom e-commerce service helps smaller pharmaceutical distributors stay current with new product information:



1. With a new product about to be launched, a pharmaceutical products manufacturer sends an e-mail to smaller wholesale distributors notifying them of the upcoming product.
2. At the same time, the manufacturer also sends details of the new product to Sterling Commerce, which posts them in Web format.
3. After receiving an e-mail notification of the new product, wholesalers log on to Sterling's site with a password and ID to get a personalized view of the new product information.

nQuire simplifies corporate info gathering

BY JASON MESERVE

Corporate portal announcements are all the rage this summer. Jumping on the bandwagon is a 2-year-old start-up that wants to help feed information into the burgeoning market for a single interface into all corporate data.

This week nQuire will launch its nQuire Server Suite, software designed to make accessing and analyzing structured data as simple as using a search engine.

"We want to be the Inktomi for corporate portals and structured data," says Lawrence Barbetta, nQuire's president and CEO, referring to the search engine provider for Excite@ Home and Yahoo. Inktomi builds search engine and caching technology for high-end Internet sites.

The company's application server aggregates information from various sources such as databases, data warehouses and operational data, using SQL, XML and Open Database Connectivity interfaces. Users peruse the data via a standard Web browser. Also included in nQuire's suite is a calculation engine for doing computations on information coming from different data sources.

"There are a lot of engines for unstructured data, but not many for structured information that can be scattered across the enterprise," Barbetta says.

Based in San Mateo, Calif., the firm has used its founders and engineers' decision support background in building the engine and the server. The firm includes decision support people from Cognos and Platinum, and server development engineers from Verity and IBM's teradata division, Barbetta says.

Target customers include nontechnical business users who need access to common business information, such as sales and product information. For power users or those who need to do more in-depth data reporting, the system can be integrated into reporting tools. This ability saves system administrators from having to deal with APIs, Barbetta says.

From a portal perspective, International Data Corp. analyst Gerry Murray says nQuire can fulfill a service for portals focused on structured data. "When deploying corporate portals, companies are going to realize the need to feed them," Murray says. Such an offering will help end users who need access to analytical data but do not want to do the "heavy lifting" associated with business intelligence tools, he says.

The product will run on Windows NT Servers, with the ability to access data on Unix, mainframe and AS/400 systems. The initial release will feature simple clustering technology, with more robust failover and load-balancing functionality due at year-end. Pricing starts at $125,000.

nQuire: www.nquire.com

Oracle broadens line of Web-based applications

BY JOHN COX

REDWOOD SHORES, CALIF. — Oracle continues its quest to be a major software vendor for Web-based business with last week's release of Oracle Sales Analyzer.

As with its other software, Oracle has recast Sales Analyzer as a Web application, as part of a major push to create an array of end-user tools, applications, middleware and databases specifically for linking electronic business processes, such as online marketing, ordering, inventory control and shipping.

With Sales Analyzer 6.2.1, Oracle also released Express Web Agent 3.0, a package that lets Web users access the more extensive analytical features of Oracle Express Server. Version 3.0 has added a set of new analysis features, such as the ability to specify exception criteria and export data to spreadsheets or other PC applications.

As the name suggests, Sales Analyzer lets users study sales and marketing data to determine, for example, what are the 10 lowest-selling products in a given territory or time period. The package includes features for running a variety of common analysis programs or reports on sales data.

The new version is written entirely in Java. Formerly, Sales Analyzer was a client/server application for Windows PCs, but all the software's code now runs on a server, where it is accessed by users with a Java-compatible Web browser.

The user interface is downloaded to the browser via a special Java file, called a JAR file. The application is set up so this downloaded portion disappears after the user is finished with it. But the settings can be changed so the file is

See **Oracle**, page 44

Interchangeable?

For a business world that now works 24x7, the new Compaq Armada line delivers maximum flexibility and compatibility. Any new model can work with any new Docking Solution, for mix-and-match convenience. Common MultiBay devices let users share a second battery, plus DVD, CD and other drives, across multiple Armada models. Which simplifies inventory needs and lowers your total cost of ownership. In short, for just about any mobile enterprise, the versatile, flexible new Compaq Armada Series is a nonstop solution that really clicks. Details? Visit www.compaq.com/armada, or call 1-800-AT-COMPAQ.

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Sybase,
continued from page 39

database events and information across applications. The product supports messaging products from Tibco and IBM, and is available now.

• A beta version of PowerDesigner 7.0. The new version of this database modeling tool supports object-oriented analysis and design, which enables database administrators to create object-relational models. PowerDesigner 7.0 will be available for download from Sybase's Web site this week. It is expected to ship in the fourth quarter of 1999, and pricing will be announced at that time.

• Three new Industry Warehouse Studios, which are packages of five data analysis customer relationship management applications. The new offerings are the Sybase Capital Markets Industry Warehouse Studio, the Sybase Life Insurance Industry Warehouse Studio and the Sybase Credit Card Industry Warehouse Studio. The products are scheduled to ship on Sept. 1 for Unix and NT. They start at $100,000.

• A new middleware product codenamed Open Door, which is slated to be in beta testing by December and ship in early 2000.

Finally, Sybase also outlined a plan to make it easy for users to build and deploy electronic commerce applications for mobile devices. Called e-Anywhere, the plan will center on the synchronization and distribution of data, the local data store of mobile devices and the customization of applications. The first product to be part of this strategy will be the new release of the company's SQL Anywhere Studio, due in the fourth quarter.

Merrill Lynch, in a November 1998 report, dubbed the sector Sybase is going after the Enterprise Information Portal (EIP) market and said it would reach $14.8 billion by 2002, up from $4.4 billion in 1998.

Merrill Lynch defines EIPs as "applications that enable companies to unlock internally and externally stored information, and provide users with a single gateway to personalized information needed to make informed business decisions."

The Delphi Group agrees that the EIP market is poised for big growth. "Sybase is making a very important and strategic bet that the portal market will be an area for differentiation," says Koulopoulos.

Pérez is a correspondent with the IDG News Service.

Oracle,
continued from page 42

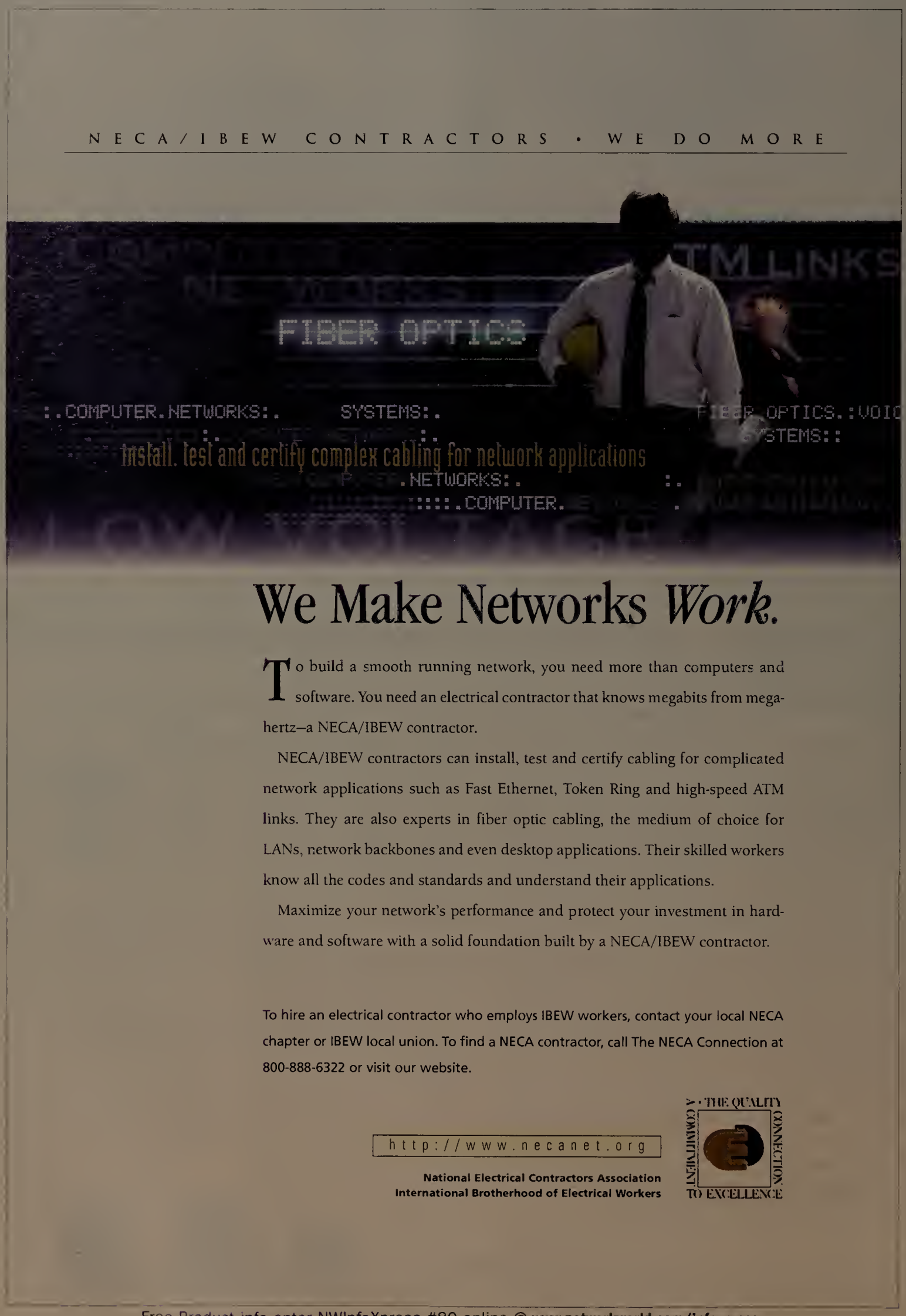
stored permanently on the user's PC. The browser-based code is updated automatically whenever new software is added on the server.

Besides recasting individual applications for the Web, Oracle is doing the same thing for its server-based products. For example, the Oracle8i database and the Oracle Applications Server have been released with extensive support for Java and other Web and Internet standards, for example.

Next month, Oracle will activate an electronic market, called Oracle Exchange, that will let any company buy and sell business goods and services via the Web.

The market will rely on Oracle's Web-based software products, which means that companies can participate without having to buy or install Oracle software: All features of Oracle Exchange will be accessed via a Web browser.

Oracle: www.oracle.com; www.oracleexchange.com



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'Net Insider . Scott Bradner

WHEN PARALLEL SERVICE IS NOT THERE

If it's true that one is known by one's enemies, then you might want to take a close look at who is fighting to force AT&T to open its new cable TV infrastructures to competing ISPs. For me, it's almost an autonomic reaction — if the local telephone companies are in favor of something, then I should oppose it.

As regular readers of this column know, I've been a longtime, happy user of MediaOne's cable modem-based Internet service. I've been watching — and cheering on — the growing availability of cable modem Internet services around the country. I think that others should have the same type of high-speed and reliable Internet connectivity as I've been fortunate to have. *The Wall Street Journal* reports that Kinetic Strategies of Phoenix estimates there are now just about a million of us cable modem Internet service subscribers and that the service is available to about one-third of all homes that are passed by the cable infrastructure.

But that means that two-thirds of the cable infrastructure does not or cannot support cable modems. Thus, I was enthused when AT&T spent almost $150 billion to purchase cable TV companies with the specific aim of offering Internet and voice services and when the carrier committed to spend the very large sums needed to bring much of the current infrastructure up to a level where it can support these services.

But now we are seeing a number of organizations, ostensibly in the name of consumers, fighting to force AT&T to allow other ISPs to use the infrastructure that AT&T wants to upgrade. The argument is being made that AT&T will have a monopoly on Internet service if this is not done. But this argument misses two things: 1) There is a parallel infrastructure that can be used to provide high-speed access, and 2) the effect of the reduced incentive for AT&T to invest all that money if it thinks it cannot get a good return.

As the head of the Federal Communications Commission noted, digital subscriber line (DSL) services, which in some ways are even better than cable modems, seem to be mostly offered by the phone companies where cable modem service exists. Even phone companies can sometimes recognize competition when they see it.

It seems to me that the direct result of forcing AT&T to open its cable plant would be to slow to a crawl the upgrading of the currently unsuitable two-thirds of the infrastructure and reduce the pressure on the telephone companies to deploy DSL. Tell me again how reducing choice is good for the consumer.

Note also who it is that is on the consumer's side: America Online, whose ISP business might be impacted, plus some competing ISPs and local phone companies. The latter are quite well known for their pro-consumer track record.

Disclaimer: Harvard, in spite of its reputation, tries to be pro-consumer, but the above reaction is mine.

Bradner is a consultant with Harvard University's University Information Systems. He can be reached at sob@harvard.edu.

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New spec will help secure LANs

BY HAMID KARIMI AND VIPIN JAIN

For network managers, authenticating remote access users is a simple process: The user dials in to the enterprise, the call is diverted to a RADIUS server, the server fires off a password challenge and, if it receives the correct response, it lets the user into the LAN.

But for users already inside the firewall — those working from their desktop PCs — few authentication methods exist.

However, a proposal is before the IEEE that would extend the benefits of remote authentication to internal LAN users. And because it makes use of existing standard technologies, the new Extensible Authentication Protocol Over Ethernet (EAPOE) specification promises to do the job without adding new client software to typical desktop PCs.

The EAP part comes from the ubiquitous Point-to-Point Protocol (PPP), which activates the modems of most of today's remote users. An IETF standard, PPP is typically called on to establish peer-to-peer links.

A PPP option also allows for user authentication via either Password Authentication Protocol (PAP) or Challenge Handshake Authentication Protocol (CHAP), either of which consults with a company's central Remote Authentication Dial-In User Service server to validate employee passwords.

One of the key features of PPP is its extensibility, and one of PPP's little-known extensions is Extensible Authentication Protocol (EAP). But where PPP offers only simple peer-peer authentication using PAP or CHAP, EAP makes it possible to use a wider range of authentication protocols.

Roots of EAPOE

To bring this capability to today's LAN users, the new EAPOE specification borrows, or "de-links," EAP from its PPP transport mechanism, then assigns it to a new transport mechanism — Ethernet.

EAPOE swings into action as soon as a new connection is detected by a LAN switch's Ethernet port. The switch challenges the new arrival by sending an EAPOE packet with a Request Identity message. The new device, such as a user PC, embeds its user ID into the EAPOE data field and sends the packet back to the switch.

The switch then transmits this information within an EAP Access Request message to the RADIUS server.

For communicating with RADIUS servers, the EAP packet does not have to be encapsulated in Ethernet because, as with PPP, EAP is able to use the RADIUS protocol as its transport mechanism.

The RADIUS server responds by sending an Access Challenge message back to the switch, effectively asking to see the password for that user ID. The switch encapsulates this within EAPOE and sends it to the requesting PC.

The PC then enters its password and sends it via EAPOE back to the switch. Typically, passwords are sent in encrypted format — compatibility with encryption software is another feature of EAP and, therefore, of EAPOE. The switch turns this into an Access Response EAP packet, encapsulating it in the RADIUS protocol for transmission to the RADIUS server.

Once the RADIUS server finds the user ID/password match in its database, it sends a final "success" message to the switch, which now activates the user port connection.

In a topology without I/O bottlenecks — and with reasonably fast database-search facilities — this entire process should take less than one second.

As simple as the process seems, EAPOE offers a sophisticated mechanism for securing LANs with different security topologies and with various security methods.

Also, thanks largely to a variable-length data field in EAP that can accommodate a range of security technologies, the standard is open for use with virtually any current or future security method, including MD5 challenge, token cards or even biometrics.

An IEEE working group will soon be assigned to EAPOE. Vendors backing the specification include 3Com, Cabletron, Extreme Networks, FORE Systems, Hewlett-Packard, Intel and Merit Network.

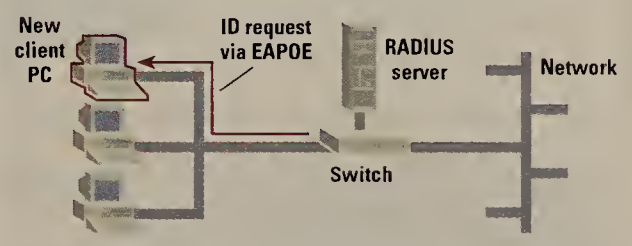
Karimi is a technology marketing manager at 3Com, and Jain is a consulting architect for 3Com. They can be reached at Hamid_Karimi@3Com.com and vipin@cmetric.com.

HOW IT WORKS

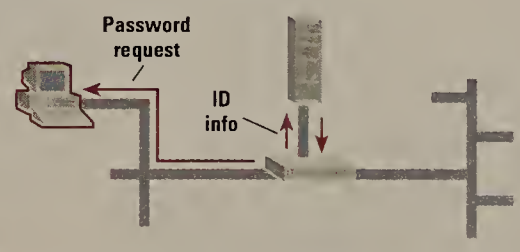
EAP Over Ethernet

This example shows how an internal LAN user is authenticated using the EAPOE specification.

1. A new connection is detected by a LAN switch port and causes the LAN switch to request user ID via Extensible Authentication Protocol Over Ethernet (EAPOE).

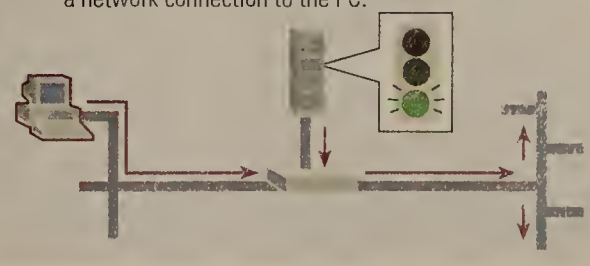


2. The switch then forwards the user ID to a RADIUS server via EAP encapsulated in RADIUS protocol. The RADIUS server responds with an "Access Challenge" password request, which is forwarded via EAPOE.



3. The connecting PC now adds an encrypted password to the EAPOE packet. The switch relays the password to the RADIUS server via RADIUS protocol.

4. If the RADIUS server signals "success," the switch opens a network connection to the PC.



Ask Dr. Intranet

By Steve Blass

We're expanding our intranet to support a handful of external partners. Can you recommend a good virtual private network (VPN) package for Linux?

Via the Internet

Check out Linux FreeS/WAN at www.xs4all.nl/~freeswan. It provides IP Security (IPSec) and Internet Key Exchange (IKE) tools for connecting pairs of sites using encrypted software tunnels. FreeS/WAN is distributed as source code for Linux systems running Version 2.03X kernels. Red Hat Linux is the recommended distribution.

After backing up your existing kernel and configuration files, build FreeS/WAN and follow the instructions in the INSTALL file. The documentation walks you through configuring your VPN tunnels and establishing encryption keys. VPN configuration information is kept in the file "/etc/ipsec.conf" and encryption keys are kept in the file "/etc/ipsec.secrets." Pay attention to setting the right permissions on these two files to keep their contents secure.

Once FreeS/WAN is configured on both tunnel gateways, the VPN connection can be established using the keys in the "ipsec.secrets" file with the command "ipsec manual - - start name" or IKE to negotiate the session keys automatically with the command "ipsec auto - - start name".

FreeS/WAN uses Triple Data Encryption Standard encryption and cannot be exported out of the U.S., but it will interoperate with Cisco, Network Associates, OpenBSD and Raptor IPSec implementations using Triple-DES.

Blass is a network architect at Sprint Paranet in Houston. You can reach him at drintranet@paranet.

Gearhead — inside the network machine . Mark Gibbs

A GUIDE TO THE COMMON GATEWAY INTERFACE

Have you ever been to a Web site and seen one of those stupid counters that proclaim how many visitors have been subjected to the site's inanities?

Gearhead, as you might have guessed by now, deplores the use of Web counters. They frequently give the wrong value (often intentionally), and if the value is correct and low (as in "This page has been visited 12 times since January 1994"), it pretty much indicates a certain lack of success.

Be that as it may, some Web site owners, for reasons known only to them, like Web page counters. And despite the silliness of Web counters, you may have wondered how they work. The answer is through a Web server application that pretty much any type of Web server can run to create dynamic Web content, such as a page counter.

These server applications can be invoked in one of two ways: First, by the Web server receiving a URL that requests the execution of a program; or second, by a program specified to intercept all or a selected range of incoming URLs. The latter case involves configuration that is specific for each type of

Web server, but both methods use the same mechanism to send and receive data from the server application.

The most common communications mechanism used for this activity is the Common Gateway Interface (CGI). As APIs go, CGI is pretty simple. It relies on two standard features of applications called standard input and standard output, otherwise referred to as stdin and stdout, respectively.

A little sidetrack is required here: Standard input for programs is the keyboard, and standard output is to the screen. When one application wants to communicate with another, sending data to the other program's standard input — that is, pretending to be the keyboard, is a simple method. And replying via the standard output is equally easy — the program just prints.

So with CGI, when the Web server receives a URL that specifies that a program is to be run, and assuming that running programs is allowed and that the program exists on the disk where the URL indicates, the program is executed.

Typically, a Web counter program uses a file to keep a tally of requests and every time it is executed, it updates the value in its file and then outputs that value. A URL to run a Web counter on a Web page might look like:

My stats.

And the Web server would receive:

/cgi-bin/webcount.exe

Before you ask, no, the server name is not passed to the Web server — there's no point, as the Web server should know its own name from its configuration data. In the example, the program receives no additional data and simply writes a response (usually formatted as HTML) to stdout. In this case, the response would be a complete Web page. A more complex example would place the Web access counter inside a Web page. To do this, we have to get tricky.

Although we can easily generate a text version of the counter value, it is not that straightforward to include text in a Web page (you have to use something called "server-side includes" which Gearhead will discuss in a future column).

On the other hand, including images is easy and that's what most Web counters do.

The process is simple: The counter program outputs the current count value as a graphic image built by combining a number of image files, one for each digit. The counter image is referenced in a Web page in much the same way as any other image. For example:

<img src="cgi-bin/webcount.exe">

There are a number of Web page hit counters available for free on the 'Net: Gearhead recommends checking out Matt's Script Archive Counter at www.worldwidemart.com/scripts/counter.shtml for a sound and workable example. That is, if you must use one.

Send your count to gh@gibbs.com.

Preparing for Win 2000

In this week's Help Desk, a reader asks what he can do to get ready for Windows 2000. His management team wants to roll out the software as soon as possible, and he has already purchased Beta 3 in the Corporate Preview Program. But as you'll read, Ron Nutter has a host of suggestions, including which books to read and what sites to visit. He also provides a handy link to a list of hardware that Windows 2000 supports.

DocFinder: 4429

Interview follow-ups

What you do after an interview can be almost as important as what you did during the interview. This week the Career Doctor looks at how to conduct yourself after visiting a company — from exiting the building to writing thank-you notes. Even if you're not going to accept the job, you still have to make a good impression in case other positions become available, he says. And a follow-up call can make or break a company's decision to hire you. Shaun Kelly will be online this week with tips to help you.

DocFinder: 4430

Surfing the friendly site

Anyone who has traveled through Boston's Logan Airport knows the troubles travelers are encountering. Construction inside the airport and on nearby roads has things in a tangle. But Massport, the agency that runs Logan, has turned to the Web for help.

Massport, with the aid of NetNumina, a Web site developer, has created an information hub for travelers. From real-time flight information to parking updates to e-mail about flight arrivals and departures, Massport is looking to provide an interactive one-stop shop for passengers.

DocFinder: 4431

E-comm anyone?

You have millions — if not billions — of dollars riding on your networks, and you're trying to make a go of patchwork electronic commerce nets. You need to reconcile the latest technologies with the realities of your legacy nets. Network World Fusion is rolling out a new newsletter in September to help you with your e-commerce challenges. In a free twice-weekly e-mail dispatch, Network World Fusion Managing Editor Sandra Gittlen will offer you tips, topics and tales from the e-commerce front lines. She'll tell you how the latest products fared in user nets and what technologies will help get the job done. She'll also give you tips on how to structure your e-commerce effort.

DocFinder: 3850

Doling out the dough

MCI WorldCom, AT&T and Lucent all have active venture capital arms (see story, page 31). In fact, Lucent has been handing out money and buying up companies like they're going out of style. But if you think carriers are the only ones spending big bucks on new technologies, think again. Our venture capital database shows where venture capital dollars are flowing. Search it or download an Excel spreadsheet.

DocFinder: 4432

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A decade of testing

THE TOLLY GROUP

Opinions

Editorial Insights

Peering into the future via network crystal ball

Network managers often double as seers.

You have to stare deep into your network as if it were a crystal ball and divine what it will look like down the road. What technologies will be mature? What companies will still be around to offer you support? How much of your network will you still have direct control over?

Before you go hat in hand to the people who control your company's purse strings, you have to have a clear vision of what the future holds for your network.

To help you, *Network World* is hosting a power panel session at NetWorld+ Interop '99 Atlanta. Your favorite columnists, including Mark Gibbs, Dave Kearns, Daniel Briere, Joel Snyder, Steve Blass and David Rohde, will put on their prognosticator caps and give you a glimpse of what future issues networks might hold. Here's a sampling of their predictions:

Gibbs says that we're in the calm before the storm. The government is gearing up to regulate the pants off us on the Internet. He says the consequence will be major headaches for network managers who have to develop workarounds. You'll have to become experts in privacy statements, content publishing and the distribution of privileged information.

Meanwhile, Kearns says don't get too caught up in deciding which operating system to choose. The real challenge will be picking a directory service. He predicts desktop and server operating systems will be managed by directories, as will network hardware. New protocols will let products be installed, maintained and updated through directories.

And lest you think your traffic will travel over a pure IP network, think again. Rohde says don't be fooled — ATM will be at the core of carrier offerings, even if they call them "IP services."

Which of these predictions will affect you? Which don't hold water? Send your thoughts as well as your network readings to me. The best ones will be debated at our "Crystal Ball: Peering into your networked future" session in Atlanta. Be sure to join us from 11 a.m. to 12:30 p.m., Wednesday, Sept. 15, in Room 202E of the Georgia World Congress Center.

— Sandra Gittlen
sgittlen@nww.com
Managing Editor
Network World Fusion

Message Queue

Undo to others

Your review of NT domain migration tools ("Heavy-lifting help for your Active Directory move," Aug. 16, page 57) overlooks key migration "undo" functionality provided by FastLane DM/Manager, while singling out this functionality as a primary basis for favoring another product.

DM/Manager has always provided the most granular undo capabilities, allowing administrators to undo whole migrations, any subcomponents of a migration, a portion of a project or the entire project. Such functionality is especially critical for large network environments of thousands of users, where migrations are often performed in stages. The ability to undo ensures minimal network disruptions while migration project plans are optimized and changed.

Keith Millar
Senior product manager
FastLane Technologies
Halifax, Nova Scotia

Such a bargain

Regarding your news brief "Hell's cells" (Aug. 9, page 6):

I am envious of those lucky cell phone users in Los Angeles who pay only $120.69 for 600 to 1,500 minutes of usage. Here in Nome, the rate for 600 minutes is approximately $335, and 1,500 minutes would cost over $750. One other note: Cell phone service was installed here just this month.

Jerald Brown
Nome, Alaska

Testing, testing

Regarding Kevin Tolly's column "Switch testing roll call: On board or AWOL?" (July 26, page 22):

In a perfect world, all users would have time to test drive the network products we intend to use. In the real world, however, we don't have the time or budget to test network products effectively. That's where testing by independent companies becomes important. When we, as end users, purchase so many millions of dollars worth of equipment every year, we rely on independent testing to provide us with insight into performance and suitability for our applications.

One would hope that a switch manufacturer would be excited to have its products tested against the competition. To me, a vendor that balks at independent testing is suspect and not suitable for my network needs.

I'm looking forward to the results of *Network World's* testing.

Raymond Santana
Network analyst
University of California-Davis Medical Center
Sacramento, Calif.

Smiley when you say that

Regarding Mark Gibbs' column "Don't say it with smileys" (Aug. 9, page 62):

Emoticons have an important purpose: to anticipate the potential (and unexpected) misinterpretations inherent in written communications. Much of what we communicate in face-to-face conversation is in tonality, rhythm, pauses and gestures.

Most e-mail authors have a specific set of nonverbal habits that they assume while writing and are surprised when the occasional recipient applies a different emphasis or tonality and arrives at a completely different meaning. Where interpretation is important to the transaction, the occasional smiley-face can prevent a flame war.

There are two messages here: Smiley-face emoticons have a useful purpose, and like most things in this world, they can be abused.

Please *do* use smileys, but sparingly and wisely. It's in the excesses and abuses that Gibbs' concern about possible deceit may be appropriate.

Carol Anne Ogdin
Deep Woods Technology
Santa Clara, Calif.

Every one of Mark Gibbs' complaints about folks who use emoticons applies equally to columnists who resort to pseudo-markup tags like <confession> and <digression> to make their point. Learn to say what you mean, Mark, and trust your readers to get it.

John Goulden
Bethany, Okla.

Send letters to nwnews@nww.com or John Gallant, editorial director, Network World, 161 Worcester Road, Framingham, MA 01701. Please include phone number and address for verification.

Open cable access . Blair Levin

'LITE' REGULATION: TASTES TERRIBLE, AWFULLY FILLING

The push by America Online and GTE to force AT&T to open its cable network to competing ISPs has involved some remarkable sleights of hand. The sight of GTE, with upwards of 95% market share, and AOL, with a market share almost 10 times larger than its nearest competitor, portraying themselves as needing government protection against AT&T affiliate ISP Excite@Home, a competitor with 2% market share, is a wonder to behold.

But as a former regulator, the rhetoric I find most amazing is the claim that the government-regulated forced resale that AOL and GTE seek requires only "lite" regulation. I am not always an opponent of regulation. But I am always opposed to misleading policy makers about the implications of what one seeks.

In my four years at the Federal Communications Commission, the toughest problems we encountered were those presented by requiring one competitor to make its facility available to another. That's not to say such regulation is never justified — but it is never lite. Because such access involves pricing, technical standards, interconnection agreements, quality-of-service standards and thousands of details, government intervention is inherently a heavy task. Anyone who saw what the FCC went through in implementing the 1996 telecom act would appreciate the difficulty. Our efforts to figure out how such forced resale would work in the telephone arena required us to spend an extra $500,000 just for overtime utility bills. If we had had to pay overtime wages, the federal budget might still not be balanced.

AOL says all it wants is the same deal Excite@Home has. Putting aside that AOL could have come to the cable industry with that deal or participated in Excite@Home but chose not to do so, the Excite@Home agreement is many pages long and took a year to negotiate. Neither AOL nor any other forced resale advocate has been willing to agree to all those terms.

GTE readily concedes the complexity of forced resale — when applied to its own network. Because the cable plant involves a shared network, the forced resale proposals inherently involve line sharing, something that has never been required of the phone companies. GTE says line sharing is easy on the cable facility but attacks proposals that would require GTE to share its lines as "harming competition and consumers ... [causing] unnecessary costs ... and raising considerable operational issues." As Ameritech said in its FCC filing on the line-sharing proposal: "A host of practical, technical and operational issues ... preclude any near-term sharing obligation."

There are more important reasons to oppose the forced resale proposals — specifically, because any such policies would delay deployment, reduce the number of competitive facilities and raise costs for consumers. Complicated regulation is not, in and of itself, a reason to oppose regulation. But the fact that AOL, GTE and their lobbyists feel a need to so misrepresent the nature of what they seek should cause policy makers at all levels of government to view their claims with a skeptical eye.

Levin was chief of staff for former FCC Chairman Reed Hundt and is currently a principal at the Blue Hill Group, a telecom consultancy in Washington, D.C. He can be reached at blevin@bluehillgroup.com.

Yankee Ingenuity . Howard Anderson

R&D BREAKDOWN IS DRIVING FORCE BEHIND ACQUISITION FEVER

Two weeks ago, Lucent bought its sixth Massachusetts-based company so far this year: Excel Switching. On the same day, Cisco paid $143 million for MaxComm Technologies and forked over $49 million for a 4% stake in Akamai Technologies. Just a few months ago, Siemens shelled out $1 billion for three tiny start-ups. And Nortel Networks is buying young companies left and right, as well as investing serious money in venture capital firms.

What's going on here? The CEOs of these companies have come to an inescapable conclusion: For far too long, they have relied on internal research and development to get new products right — and far too often, R&D has failed. This has caused these behemoths to go through four stages: Denial, Anger, Grudging Acceptance and Giddy Acquisition.

When faced with a new technology, the big companies first stonewall: "This technology doesn't work, won't scale and causes cancer in laboratory rats." While they're wallowing in Denial, they're also urging their tech teams to work overtime to catch up, before customers can beta-test a competitor's new hardware.

The second stage, Anger, kicks in when the new players start to gain serious market share. For example, Excel switches help the new kids on the block get going with voice mail, fax forwarding and voice over the Internet.

The new kids believe in and build to open standards. Meanwhile, the old guard, such as the European equipment guys and Lucent and Nortel, do as little as possible, as loudly as possible (Grudging Acceptance). The new kids also are getting lots of money — from the public markets and the smart venture capitalists. In fact, competitive local exchange carriers add more access lines now than the older regional Bell operating companies.

At this point, the brain trust at Lucent switches to Giddy Acquisition. Its logic goes something like this: "Look, the market is moving away from us and is moving at an even greater speed. Do we want to wait until the market is so big that we can't afford to play, or do we want to move now?" Lucent paid $19.6 billion for Ascend; it could have had Ascend's real asset, Cascade Communications, for $4 billion if it had moved just two years earlier.

The thinking now is that it's better to overpay early than overpay late. So Lucent goes shopping and buys companies such as Xedia, Kenan Systems and Nexabit for very high numbers and then tries to integrate all of them into a coherent product offering.

Cisco is the master of this maneuver. Cisco's stock is so hot that it often will buy multiple companies in the same area, just to ensure it has covered that technological base. Cisco wants the enterprise market and the carrier market; Lucent is more focused on the carrier market but will buy a systems integrator such as I NET just to make sure that it has the capability to serve the enterprise market.

This presents an interesting set of new problems. The network integrator's job is to pick the best technology available to solve your problem. But when the network integrator is owned by an equipment provider, there is a strong temptation to favor the sister company.

In any case, the Europeans will be the last to arrive at the party, if only because they are slow on the uptake. Alcatel will buy Packet Engines; Siemens will buy Redstone; Marconi will buy FORE Systems.

However, the Europeans have three problems. One, their stock is not in the stratosphere, so they suffer real dilution when they overpay with impunity. Two, they usually wind up with second-tier companies at first-tier prices. And three, they screw up the companies from the minute they buy them, often with a heavy-handed approach to management — at which point management of the acquired company leaves, raises venture money and starts the process all over again.

(By way of disclosure, let me say that every company mentioned in this column is a client of The Yankee Group, and I am a principal with Battery Ventures, in which Ameritech, Bell Atlantic, Williams, Novell and other telecom companies are investors.)

In the end, who benefits? Actually, everyone. The big companies get better technology faster, even if they have trouble integrating it. The enterprise companies and carriers get advanced technology and the warm, fuzzy feeling that these new companies have the muscle to build and support the products. And the economy benefits from all this hybrid vigor.

Anderson is founder and president of The Yankee Group, a consultancy in Boston. He can be reached at handerson@yankeegroup.com.

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Feature

RELIABILITY CHECKLIST

BY PAUL DESMOND

A guide to the architectural, configuration and environmental factors that promote reliability and availability in a core LAN switch.

When the advertising firm Bates USA was relocating its Manhattan offices in March, the company used the opportunity to upgrade its network, installing a series of 3Com CoreBuilder 9000 switches throughout six floors of its new building.

The three-and-a-half-day move went well, save for a glitch with one 20-port 10/100 CoreBuilder 9000 module, says Joseph Murello, Bates' senior vice president and director of IT. To ensure it wasn't the switch fabric at fault, Murello and his senior technical consultant, Peter Dentico, decided to pull one of the two switch processor modules out of the CoreBuilder 9000 chassis. That should have prompted the 9000 to kick over to the second switching fabric without losing a beat, which is exactly what happened.

"It was an immediate switch. We didn't even notice it. We thought we did something wrong," Murello says.

"The only reason I knew I had pulled the processor was because I was holding it in my hand," Dentico adds.

That's the way redundancy is supposed to work in a core LAN switch, but redundant processors and hot-swappable cards are just a few of the many attributes that contribute to high reliability or availability in the switches that sit at the center of your network. These include the cooling system or even the number of paths across a switch backplane between I/O modules and the switching fabric.

"Reliability means things don't fail," notes Bob Bellman, principal with BrookTrail Research in Natick, Mass. "Availability means, even if something fails, you can still get to the network."

There is a veritable checklist of items to consider when switch failure isn't an option. The following guide highlights some of the most important fault tolerance factors and gives you tips for ensuring the physical environment in which you place the switches likewise promotes availability.

Dissecting fault tolerance

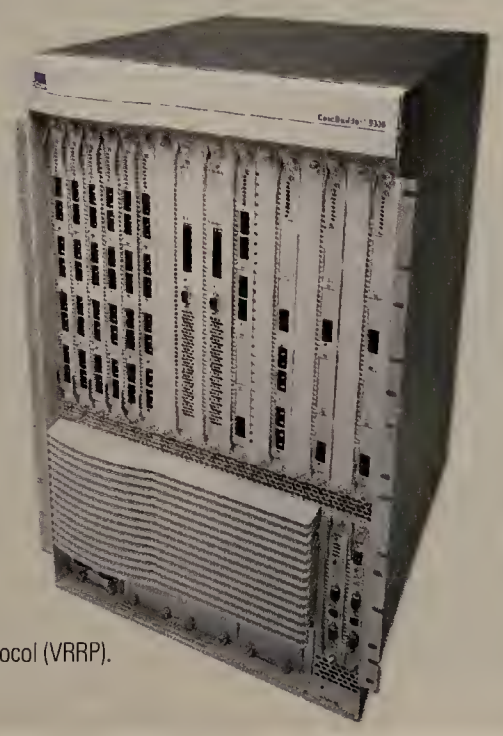
Here's a look at some of the features that promote reliability and availability in a switch.

Switch architecture:

- Redundant switch processors, preferably with active backup.
- Redundant, n+1 power supplies.
- Hot swappable I/O modules.
- Distributed architecture — I/O modules perform some switching.
- Dual management modules.
- Temperature monitoring capability.
- Dual clock sources.
- Bellcore Network Equipment Building Standards (NEBS) compliant.

Configuration and management features:

- Support for link aggregation (IEEE 802.3ad).
- Support for multipoint link aggregation.
- Support for Hot Standby Routing Protocol (HSRP) or Virtual Router Redundancy Protocol (VRRP).
- Trend analysis tools.



Power play

Mundane as it may seem, power is perhaps the most basic consideration when it comes to reliability. Any core LAN switch has to have multiple power supplies and n+1 redundancy, meaning there's at least one more power supply available than it takes to run the switch. But that's not all.

"Each power supply should have its own cord and separate sources," Bellman says. "You've got to find out how the building is wired and make sure everything doesn't go through the same transformer."

It's also a good idea to look for a wide tolerance in terms of the power feed the switch will accept, says George Sullivan, senior network architect with the Bethpage, N.Y., facility of aerospace manufacturer Northrop Grumman. It's not uncommon for an electrical glitch to activate a backup power supply, such as an emergency generator, whose power frequency is not as tightly controlled as that of the commercial power grid.

"I've had equipment blow up on me because it didn't like getting 59 hertz instead of 60 hertz," Sullivan says. To be on the safe side, he advises looking for a switch that will accept power ranging from 95 to 135 volts and from 55 to 65 hertz.

Michael Speyer, associate director with The Yankee Group consultancy in Boston, raises other less technical power considerations. "Look for something that doesn't have an on/off switch because somebody can turn switches off. And you don't want a power cord that can be pulled out easily," he says. "It's the simple things that make for reliability."

Switching components

As Bates USA now knows well, having redundant processors or switching fabrics is another key issue. Even better is having a backup processor that is always active, as opposed to one that has to learn the network topology when it gets called into service. Kevin Brown, senior marketing director for Cabletron, notes that the cutover should happen with no manual intervention, which he claims isn't always the case.

And don't take the vendor's word for it that such features work as advertised, Sullivan says. "If failover capabilities are there, you've got to test them on a routine basis," he says. "Once it becomes part of the routine, it's not going to seem like an emergency when you really need it."

A distributed architecture, where I/O modules take on some of the switch chores, can also promote availability. In that case, if the central switch fabric fails (or in the highly unlikely event that both fabrics fail), at least users attached to the same switching module can communicate with one another.

Another consideration is having dual clocking sources. "Bits get put on the line at very precise levels. Timing has to be maintained or everything gets confused," BrookTrail's Bellman says. "If the clock fails, you can't put the bits on the wire or take bits off the wire accurately."

Most of these features are standard fare for carrier-class switches and, indeed, many core-class LAN switches comply with the Bellcore Network Equipment Building Standards (NEBS) that cover carrier switching gear. "You could look at NEBS compliance as the Good Housekeeping Seal of Approval for a switch," says David Passmore, founder and research director of NetReference, a Sterling, Va., consultancy.

If you want to get to the real nitty-gritty, take a look at how many traces, or paths, exist across the switch backplane between the I/O modules and the switching fabric. In the case of the 3Com CoreBuilder 9000, you'll find 10 distinct paths, five between each I/O module and each of two switching engines. Only two of these paths, each of which can handle 1G bit/sec of traffic, are currently used, says Jim McCarron, 3Com product technology manager.

Bates USA's Dentico says that was one part of the 9000's architecture that impressed him because it showed not only redundancy but also room for growth.

Managing for uptime

The dual rule also applies to management modules. 3Com, for example, has two management modules that are each kept up to date at all times so one can take over if the other fails. 3Com, like most vendors, also stores configuration data in nonvolatile random access memory, meaning it will survive I/O module or power failures, so you don't have to manually reconfigure when replacing one module with another.

Other management features to look for include trending tools that can alert you to degrading conditions over time, says Kevin Tolly, president of The Tolly Group, a consulting and testing firm in Manasquan, N.J.

"When you have problems in the network that are not caused by the switch, they very rarely happen all at once," he says. "There are usually some tremors before the big one."

As part of its CiscoWorks2000 management system, Cisco provides availability monitors that can help you conduct the kind of trend analysis Tolly suggests, says Merwyn Andrade, product manager for high availability networking in Cisco's enterprise line of business.

With CiscoWorks, users can monitor any part of a switch they want, setting thresholds that trigger alerts when they are exceeded.

Temperature is one such variable that warrants special concern, expert say. 3Com monitors three distinct temperature zones in the CoreBuilder 9000 and has three cooling-fan trays to help keep things in check. Under normal conditions, the fans run at half-speed. Should one fail, 3Com's McCarron says the others speed up to compensate.

Additionally, users can preconfigure the switch to shut down certain I/O modules if the switch gets too hot, giving preference to the most critical modules.

Maintenance of fans and other components is an issue to Northrop Grumman's Sullivan. "I don't like things that require human intervention-type maintenance — someone having to walk up to it every six months and clean something," he says. "That kind of thing is an invitation to disaster."

Configuration considerations

Even the most reliable switch is bound to go down at some point, more likely because of a software glitch than a hardware failure. But there are a number of features commonly built into LAN switches that can help you weather such a failure.

At the simplest level, many switches let you configure a given switch-to-server or switch-to-switch connection with a backup link that kicks in should the primary fail. In Layer 2 switch environments, the Spanning Tree Protocol provides for failover even in multivendor networks, although it takes 30 to 60 seconds to complete the transition. Protocols such as the Open Shortest Path First and Routing Information Protocol provide essentially the same function for Layer 3 networks.

Many switches also support some form of link aggregation, in which you can configure multiple physical point-to-point links between two switches, or between a switch and a server, to act as one logical link. This not only provides additional bandwidth, but also fault tolerance — if one of the links goes down, you've still got the others to take over.

The IEEE 802.3ad Link Aggregation Protocol should make this capability possible even across multivendor networks. The standard is expected to be finalized by the first quarter of 2000 or earlier, according to an IEEE spokeswoman.

Vendors, including 3Com, take the concept one step further by enabling the aggregate link to be divided among divergent paths. For example, a logical link between Switches A and D might consist of two different paths, one going through Switch B, the other through Switch C. This capability is also now being standardized with the emergence of the Multi-Point Link Aggregation Protocol.

For Layer 3 routing environments, there are two routing protocols that provide fault tolerance. In router environments, any given client must have a primary gateway or router to which it sends all IP traffic. If that primary goes down, you either have to reconfigure all the clients to point to a new gateway, or bring up another gateway with the address of the one that failed. Both options are time-consuming propositions.

The Hot Standby Routing Protocol (HSRP), backed by Cisco, and the Virtual Router Redundancy Protocol (VRPP), backed by a number of other vendors, enable a backup router to step in should the primary fail, masquerading as the failed router with no manual reconfiguration.

Theoretically, either protocol should work in multivendor networks. But it's early yet, and it's unclear just how well vendor implementations will work together. (The Tolly Group and *Network World* are conducting tests to determine how well capabilities including VRRP and the link aggregation protocol work in practice. Look for results in the Sept. 13 issue.)

Cisco's Andrade argues that the single biggest factor contributing to network downtime is failure to recognize the impact of change. Before making any kind of configuration change, he says you should prepare a checklist detailing all the variables involved and the effect each variable may have on other devices or applications.

Ideally, you should perform the change in a lab environment first. If it's a wide-scale change, have a plan in place for rolling back should something go wrong. And Andrade advises customers to consider making changes in small steps rather than one giant Friday night upgrade.

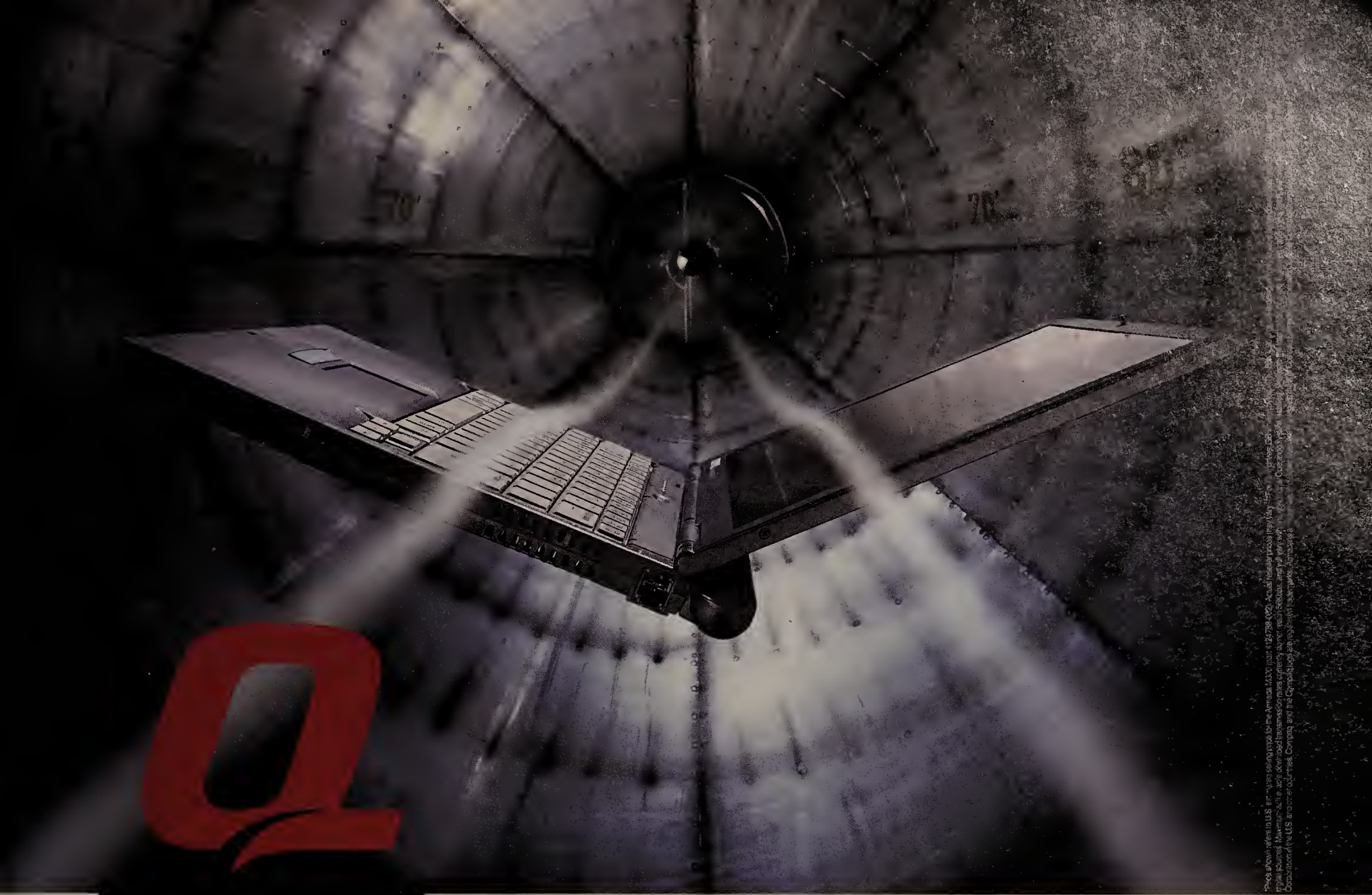
Finally, there are environmental considerations concerning high availability. In addition to sound power and a good air conditioning system, it comes down to paying attention to the finer points, Sullivan says.

Consider sprinkler systems, for example. If you're in an area where fire codes demand them, there may come a day when they go off. Chances are your equipment will survive, Sullivan says, unless you forgot one important thing.

"The same user who put the sprinkler in might not remember to put a drain in the floor," he says. "The water backs up, you have a little flood and it short-circuits all the cables."

OK, everyone make a note: "Got sprinklers? Check for drains."

Desmond, a former Network World *editor, is now vice president of King Content, a strategic publishing company in Walpole, Mass. He can be reached at paul_desmond@king-content.com.*



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NetworkWorld REVIEW

Delano e-Business Interaction Suite

Web and e-mail: A great couple

Technology's new server provides built-in e-mail for e-commerce sites, but at what cost?

BY THOMAS POWELL

Product: Delano e-Business Interaction Suite

Vendor: Delano Technology

The simplicity with which the Delano e-Business Interaction Server fits into existing e-commerce infrastructures and its overall flexibility in offering e-mail features to any Web site earns the product a World Class Award.

Much has been said about how a company's Web site serves as the cornerstone of its electronic commerce efforts. However, the ubiquity and power of the simple e-mail message is also an imperative building block for business success on the Internet.

However, building hybrid e-mail/Web applications can be tedious and expensive.

The Delano e-Business Interaction Suite, released in May (when it was called E-Mail Application Server), takes a stab at bridging the gap between e-mail and Web-based applications. Delano's product brings together Web and e-mail applications in a simple and powerful package. While some shops may be shocked at the product's high price — it starts at $50,000 — or concerned with its Windows NT-only focus, Delano e-Business Interaction Suite's ease of use, the simplicity with which it integrates with existing systems and its overall flexibility earns the product our World Class Award.

The server doesn't have to reside on your corporate e-mail or Web server. Instead, it can remotely monitor any Post Office Protocol 3 or Internet Message Access Protocol 4 server and decide what to do with the messages. It can spawn a reply, route a message to a particular user, store a message to a database and perform many other actions. The fact that it can sit in the middle of a variety of existing mail servers and Web technologies lets an organization easily implement the product without interfering with established systems. This is one of the server's key strengths: It doesn't require you to use a particular e-mail system, Web server, directory server or database.

The product consists of three major modules: the e-Business Application Builder, the e-Business Interaction Server and the e-Business Interaction Server Administrator. The e-Business Application Builder can be run from a client system or run with the e-Business Interaction Suite itself on the server. The Application Builder is a workflow-style application that lets you build an e-mail application by dragging Delano-specific software components onto a workspace and connecting them together like a flow chart.

The e-mail application begins with a "start event" component that could be the receipt of an e-mail message to a particular account, the submission of a Web form via HTTP, the occurrence of a timed event or the launch of some other script. Once the application has been triggered, it can invoke a variety of "action" components. The options include parsing the message text, calling up another script, running an external program, querying a database, saving the content to a file or database, returning a Web page via HTTP or sending out an e-mail message.

You can use simple decision components to perform comparisons or loop through data. However, given that you can access server-side scripts written in JScript or VBscript, you can write code to implement any form of decision beyond the ones included in the product. Lastly, a "wait" component can be used to make the program wait for a particular event, such as a user responding to an e-mail message or an HTML form.

Delano e-Business Interaction Suite made it very easy to build a rudimentary mail responder that would send back canned responses when e-mail came to an address such as sales@democompany.com. It was also fairly simple to create an application that took entered data, saved the data to a file or database and then presented a confirmation screen. We also created scheduled e-mails that would query a database to send a message to users who hadn't logged on to the site recently, and an application that routes messages based upon simple string comparisons of message subjects.

ScoreCard

Delano e-Business Interaction Suite

Programming (25%)	8
Integration (20%)	10
Ease of use (20%)	10
Automation (15%)	8
Installation (10%)	10
Documentation (10%)	8
Total score	**9.0**

Individual category scores are based on a scale of 1 to 10. **Percentages** are the weight given each category in determining the **total score.** The World Class Award goes to products that earn 9.0 or above on our ScoreCard.

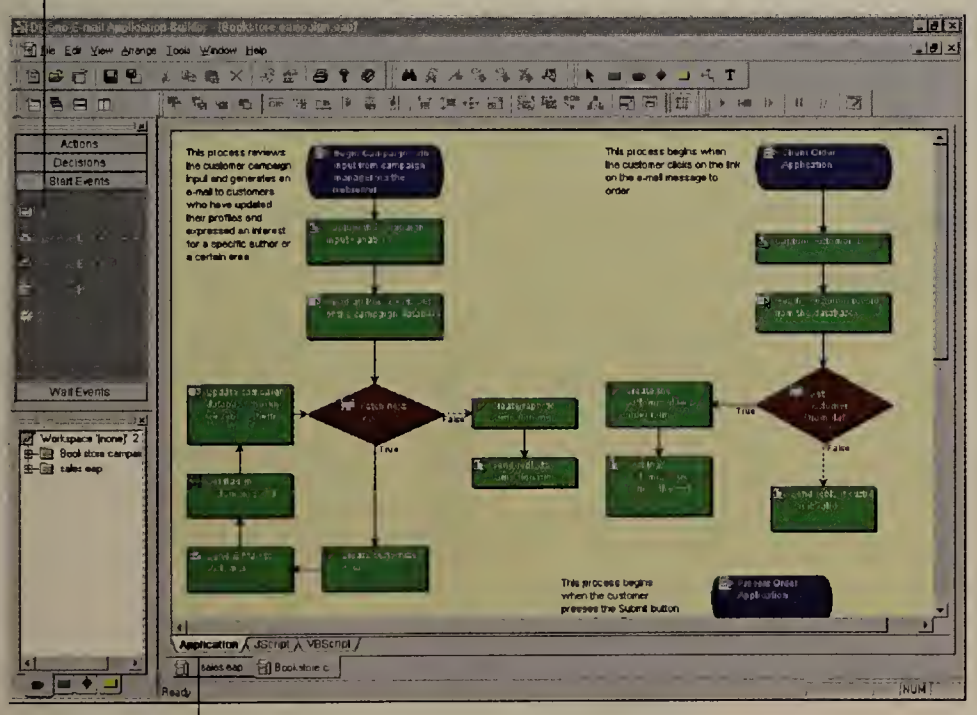
The complexity and Web integration of the application is up to the designer. For example, Delano demonstrates a simple reminder-based system on its Web site that can send scheduled e-mails to users based upon events that users enter via a Web form.

Administering various server features can be controlled from an administrator module that lets you monitor and control the e-mail application you build. If you'd rather do this from a Web browser, you can also use an optional Web-based version of the administrator, as well as Delano Web Connector, a Web server application that enables the prod-

Building e-mail into your Web site

The e-Business Interaction Suite lets you build an e-mail application into a Web site by dragging software components onto a workspace and connecting them.

The palette contains some of the components you can drag onto the workspace.



These tabs let developers modify the application and add script language commands.

uct to deal with form queries and create dynamic pages.

Installation of Delano e-Business Interaction Suite 1.0 is very easy. The product has modest requirements: a copy of Windows NT Workstation or Server 4.0 with the latest service pack applied, 128M bytes of RAM and 40M bytes of disk space.

The best thing about the Delano environment is how easy it is to build e-mail-based applications. The design environment was intuitive. It was a snap to debug and deploy the applications.

The downside is that the product always seemed to require something else, such as a database or some other application, to do much of anything beyond what a simple mailing list program or server-side scripting environment, such as Microsoft's Active Server Pages or Allaire's ColdFusion, could handle.

This is the product's strength and its weakness. Because Delano e-Business Interaction Suite doesn't require any particular technology, it can fit into any e-commerce infrastructure, Web application development environment or personalization system in place. On the other hand, if you don't have all the pieces of your Web site in place, it won't help much. If you expect to create personalized messages for site visitors, you'd better have a user database or membership system in place. If you want to let people know their order status, you need to understand your e-commerce system so you can grab the data and send a message. In short, if you want to do something sophisticated with Delano e-Business Interaction Suite, you probably ought to have done portions of it already in another technology.

Delano's solution to e-mail-Web integration isn't for everyone because its pricing sets it up squarely as an enterprise application. Pricing is based upon the number of applications deployed, ranging from $50,000 for midsize implementations to $250,000 for enterprise-class deployments.

For those who have complex automated messaging requirements, Delano e-Business Interaction Suite's pricing may not be an issue. The product's power and ease of use live up to its high price.

Powell is the founder and president of PINT (www.pint.com), a San Diego Web development firm. He is also the author of Web Site Engineering and HTML: The Complete Reference. Powell can be reached at tpowell@pint.com.

NetResults

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NetworkWorld REVIEW Enterprise server

Solid server has gigabytes to go

Toshiba's Magnia 7000 is an enterprise server you can grow into.

BY JOHN BASS,
NETWORK WORLD TEST ALLIANCE

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Toshiba has positioned its Magnia 7000 as a high-performance, general-purpose enterprise server. We found its performance a little lower than expected from a server in this class, but the Magnia 7000 has a good feature package that allows it to be flexible and grow with your needs.

Overall performance was average at 7.4. The file test score of 4 pulled down the overall performance score, most likely because the disk arrays were configured for RAID5 and not RAID0, as many vendors configure the servers they send us. RAID5 adds additional overhead from writing the parity information across the array but is a prudent choice for enterprise server users. The Magnia's network score of 9 was in line with the other servers we have tested. At 9.5, the SQL scores were strong, too, but lower than many of the servers we have tested. Faster 500-MHz or 550-MHz processors would help the SQL score and probably the other scores as well.

While performance was average, the server's price was a bit high at $53,350. Some of the cost of the unit we tested was due to its copious amount of disk space — about 110G bytes.

Our Magnia 7000 came with four 450-MHz Pentium II Xeon processors, 2G bytes of ECC EDOdynamic random-access memory, 12 9.1G-byte hot-pluggable hard drives, four Fast Ethernet network interface cards (NIC) and four hot-swappable redundant load-balancing power supplies. The motherboard has onboard UltraNarrow and UltraWide SCSI controllers. The UltraNarrow SCSI controller was used to run the CD-ROM, while the UltraWide SCSI controller was unused in this configuration due to the presence of an AMI MegaRAID 438 two-channel Ultra2 RAID controller.

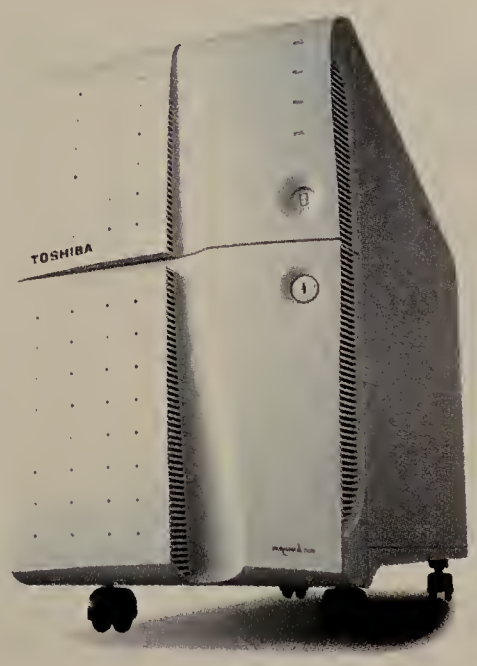
The hard drives were installed into the two drive cages that are accessible from the front of the server. Each of the cages was on a separate SCSI channel on the RAID controller. The 12 hot-pluggable drive carriers — a relatively large number of onboard drives — are well-designed and easy to use, but the drive slots support only 1-inch drives. The front door can be configured to lock the whole server or split to secure just the hard drives.

We configured two RAID5 arrays across the 12 hard drives, one for NT and the other for NetWare. The Fast Ethernet NICs were configured for 100M bit/sec full-duplex operation.

The first thing we noticed with this server was that its chassis footprint is larger than average. Its height and width are average, but it is a good six inches deeper than other enterprise servers we've tested.

The case is easy to dismantle with a convenient toolless entry design, but accessibility to the individual internal components is awkward due to the cumbersome layout of the internal wiring. The fan's wiring harness blocks the removal of one of the CPUs. The fans are not hot-swappable, and the fan cards are difficult to remove due to the routing of the fan wiring. However, the two redundant fan cards provide ample air flow through the server.

The Magnia 7000 has room for expansion, with seven PCI slots and 16 RAM slots. The four power



ScoreCard

Toshiba Magnia 7000

Performance (40%)	7.4
Features and flexibility (30%)	8
Manageability (20%)	7
Serviceability (10%)	8
Total score	7.6

Individual category scores are based on a scale of 1 to 10. **Percentages** are the weight given each category in determining the **total score**.

Feature and configuration table

Server	Magnia 7000
Vendor	Toshiba (800) 867-4422 www.csd.toshiba.com/cgi-bin/WebObjects/Toshiba.woa/wa/productSeries?productTypeId=3&productFamilyId=5&productSeriesId=20
Price	$53,350
Processor type	450MHz Pentium II
Number of processors	4
Number of processors supported	4
Memory configuration	2G bytes ECC EDO DRAM
Number and type of RAM slots	16
Expansion slots present	(6) 32-bit 33MHz PCI (1) 32-bit 33MHz ISA/PCI (1) ISA
Expansion slots available	(1) 32-bit 33MHz PCI (1) 32-bit 33MHz ISA/PCI (1) ISA
Disk controller	UltraWide SCSI controller on board UltraNarrow SCSI controller on board AMI MegaRAID 438 two-channel Ultra2 SCSI with 16M bytes of EDcache memory
Hard drive description	(12) 1-inch Seagate 9.1G byte 10K RPM
Number and description of hard drive bays	(2) each with 6 1-inch hot-plug SCA slots
Network interface	(4) Intel Pro 100+ Fast Ethernet
CD-ROM	32X UltraNarrow SCSI
Availability features	ECC memory N+1 hot-swappable power supplies Hot-pluggable drives in RAID5 configuration
Manageability features	Intel LANDesk Server Manager
Security features	Lockable split front door and case cover
Bundled software	LANDesk Server Manager with snap-ins for integration into management platforms Intel Server Control Operating System drivers Server Setup Tool for NT Unicenter TNG Framework
Warranty	3-year on-site next business day parts and labor

supplies are 3+1 redundant because three power supplies are needed to run the server with four processors and 12 hard drives.

The Magnia 7000 can be managed by HP OpenView, Tivoli TME 10 framework and CA Unicenter TNG through Intel LANDesk Server Manager that comes with the server. The server also incorporates Intel's Emergency Management Port, which allows remote serial access through a COM port. The server has a built-in Server Management Controller, which has its own CPU for monitoring the fans, power supplies, hard disks, memory and system temperatures.

On the other hand, Toshiba provides no Web management interface or proprietary management software.

Server testing is performed at North Carolina State University's Centennial Networking Labs (CNL) in Raleigh, N.C. CNL tests network equipment and network-attached devices for interoperability and performance. John Bass is a senior technical staff member at CNL who designs and leads the execution of the test suites. He can be reached at john_bass@ncsu.edu.

Bass is also a member of the Network World Test Alliance, a cooperative of the premier reviewers in the network industry, each bringing to bear years of practical experience on every review. For more Test Alliance information, including what it takes to become a member, go to www.nwfusion.com/alliance.

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Moderators

John Gallant, *Editorial Director*, Network World and **Kevin Tolly**, *President*, The Tolly Group

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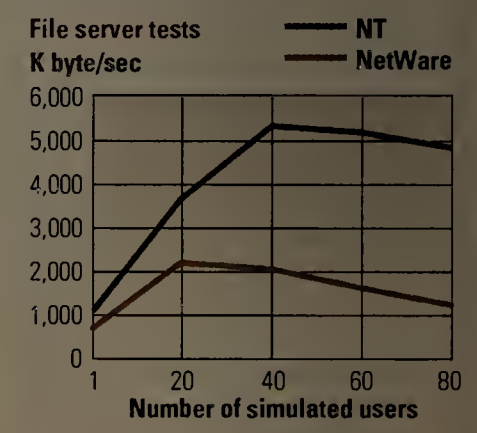

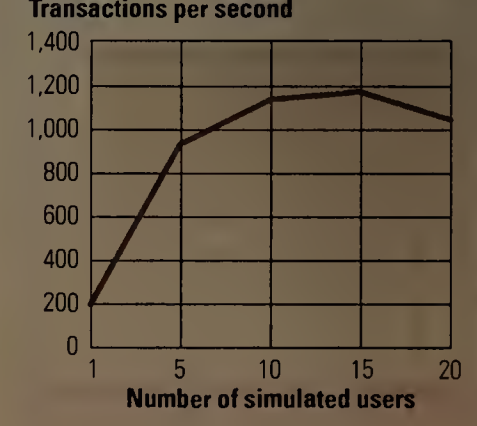

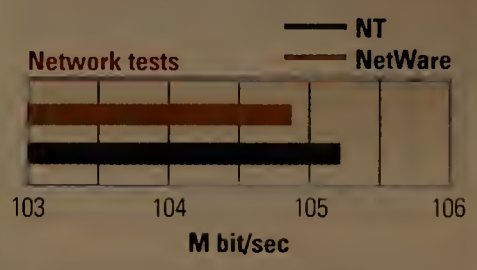

NetworkWorld REVIEW

Security monitoring software

Scanning for weak links in server security

BindView's Network Security Suite is a World Class watchdog.

BY TERE' PARNELL, NETWORK WORLD TEST ALLIANCE

Never underestimate the value of a second opinion, especially when it comes to network security. Sometimes it takes an objective outsider to see gaping security holes that you've overlooked for months; that's why network security consultants are in such demand. But consultants are expensive, and they're only around for a short while. Wouldn't it be great if you had 24-7 access to a consultant for security assessment and evaluation?

Well, you can. Security monitoring and scanning software can give you the continuous security analysis you need at considerably less cost than a human security consultant. The programs start with a careful assessment of your network's security systems. They identify server vulnerabilities and suspicious user activities, then suggest corrective actions. Some even implement their suggestions for you.

Because their role is advisory, the value of these products lies as much in their reporting capabilities as in their analytical ingenuity. After all, what good is detecting a potential security breach if the product can't effectively communicate where that breach is and how to fix it? In addition, like all good consultants, the products need to be able to keep current with the most up to date security advancements and alerts.

The product that delivered the best combination of these features in our tests was BindView Development's Network Security Suite, which consists of two pieces: HackerShield and NOSadmin for Windows NT. HackerShield is the network scanning portion of BindView's suite, while NOSadmin concentrates on server security. Together the two products create a thorough, flexible and easy-to-use security monitoring and management package.

Right on Network Security Suite's heels was Computer Associates' eTrust Intrusion Protection, a product formerly known as SessionWall-3 when it was sold by Platinum Technologies and AbirNet. The newly christened eTrust delivers competitive monitoring and analysis features and strong reporting options.

It's also much more than a security auditing product and includes a firewall, real-time intrusion-detection system and business policy analyst. (We didn't require products to include real-time intrusion-detection and alerting features, nor did we test them. Our tests focused on security assessment and prevention, and our ScoreCard rates analytical and reporting capabilities. Stay tuned for our Intrusion Detection Buyer's Guide this fall).

Close behind was WebTrends' Security Analyzer 2.1, Enterprise Edition, whose excellent analysis features and easy access to third-party security tests were tough to beat.

The final product we tested was TripWire Security Systems' TripWire 2.1 for Windows NT. While TripWire features bulletproof internal system security, it lacks a graphical user interface (GUI), and its reporting features were not as well developed as those of its competitors.

Product: Network Security Suite

Vendor: BindView Development

You can count on BindView's HackerShield and NOSadmin duo for all-around security auditing.

NetworkWorld World Class

Monitoring hosts for trouble

We began by using each product to identify and record changes that might create vulnerabilities on our servers. At the very least, we expected each of these programs to identify and report which protocols were used to access which host resources. This is one of the most basic functions of host security monitors.

All the products we reviewed performed this function admirably, but for thorough, hassle-free scanning, BindView's HackerShield module won highest marks. While it doesn't have some of the more exotic functionality of CA's eTrust Intrusion Protection, HackerShield provided the best all-around security management features. For example, HackerShield continuously scans for security violations and potential security threats throughout the network, rather than scanning only at fixed intervals as the others can. It was able to tell us about unauthorized accesses to a simulated payroll database on one of our hosts, including what ports and protocols were used to get to the host.

CA's eTrust Intrusion Protection went far beyond general monitoring. It didn't just decode network protocols and service traffic, it actually captured all packets and presented them in their original formats. This means network managers could use eTrust Intrusion Protection to read e-mail, see the content of Web pages viewed by users and identify the documents accessed by users — legal and ethical implications notwithstanding.

We liked being able to configure eTrust Intrusion Protection to monitor only selected traffic types, so you can watch Web traffic and ignore e-mail traffic, for example.

We really liked the monitoring and scanning capabilities of WebTrends' Security Analyzer. This product quickly and easily lets you select what host or hosts you want to monitor, as well as specify precise types of changes you want to monitor. For example, Security Analyzer will let you check your Web servers twice a day for potential holes in Common Gateway Interface scripts.

TripWire 2.1 took a standard approach to host monitoring. It initially created a baseline database that recorded the condition of the host. It then monitored the host for deviations from that baseline.

What makes TripWire unique is its bulletproof internal security. A secure monitoring system is just as important as the external security it aims to provide. While all took adequate steps to protect themselves, TripWire 2.1 exhibited outstanding internal security, guarding its critical files with El Gamal asymmetric cryptography.

ScoreCard

	Analysis 25%	Monitoring 25%	Reporting 15%	Alerting and corrective action 15%	Usability 10%	Installation 5%	Documentation 5%	Total score
BindView's Network Security Suite	9	10	8	9	9	10	8	9.10
Computer Associates' eTrust Intrusion Protection	10	9	8	8	9	9	8	8.90
WebTrends' Security Analyzer 2.1	8	9	8	7	8	9	8	8.15
TripWire Security Systems' TripWire 2.1	7	8	7	6	5	7	8	6.95

Individual category scores are based on a scale of 1 to 10. **Percentages** are the weight given each category in determining the **total score**. The World Class Award goes to products that earn 9.0 or above on our ScoreCard.

Analysis is key

If monitoring capabilities are the feet on which these security auditing packages stand, then their analysis aptitude is their brain. We expected each product to be able to identify system changes, such as a change in user access authorization, network address or protocol, and determine whether the changes were suspicious in nature. This involves letting network managers establish, edit and refine a set of security policies governing access to network resources. For example, you may want to regularly scan the well-known ports of your hosts for signs of possible attack, such as an abnormally high number of attempted accesses from restricted IP addresses.

While each product offers such a capability, we found that implementations varied. WebTrends' Security Analyzer offered the most advanced policy management. Its Security Test Policies evaluate different types of server vulnerabilities. In addition to a fine suite of canned security tests, which includes such detailed items as "Most Occurring Medium Risk Vulnerabilities," Security Analyzer lets you write your own tests and add them to the suite, or download tests prepared by third-party developers.

At the other extreme, straight out of the box BindView's Network Security Suite offers only the most basic type of policy management, such as event logging. However, it also provides a developer's kit that lets you customize your policies.

True to its Unix roots, TripWire 2.1 has a solid policy file that checks for any changes in the host system. However, if you find any violations, you must manually update the policy database using a painstaking editing procedure.

And while WebTrends impressed us with its policy management capabilities and tools, the overall winner in the analysis category is CA's eTrust Intrusion Protection, for its ability to reach so far into the (supposedly) private workings of each and every user on the network.

Report and resolve

If analysis is the brains, then reporting is the heart of these products.

For easy, in-depth reporting, BindView's NOSadmin stands out, offering an array of predefined, detailed security reports. Although you can customize these reports, you may find that you won't need to.

We also liked the report generator in CA's eTrust Intrusion Protection, which exhibited fine flexibility. For example, you can view network usage by just about any type of user, including protocol, client and server. eTrust offers a variety of report formats, with information well organized to aid in finding overwhelmed servers and "problem children" among the user community.

For straightforward reporting, we were again impressed with WebTrends' Security Analyzer. Its easy-to-use, predefined reports are thorough, and WebTrends includes some sophisticated custom reporting and formatting capabilities, such as allowing you to easily create foreign-language versions of your reports.

Finally, while the reports provided by TripWire 2.1 were good, we found that formatting and working with them was often awkward. Part of this awkwardness is due to the product's command-line interface, though some of the reports themselves were difficult to interpret.

Once a security problem has been detected, the ideal product doesn't simply tell you about it. Rather than rely on a network manager's ability to interpret the data, the most useful products can recommend and, with permission, implement a solution.

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The most impressive day-to-day corrective action capabilities are those of BindView's HackerShield. We found its Auto-Fix feature, which automatically fixes the security problems uncovered, to be a reliable way to quickly close security holes. For example, HackerShield immediately recognized and fixed a misconfigured NetBIOS server that was letting the world enter our network.

CA's eTrust Intrusion Protection instantly notifies you of security problems and even makes some recommendations on how to fix them. By configuring eTrust to monitor certain network events — such as accessing a particular Web site — you can keep track of who is visiting forbidden Web sites, and how often. And eTrust can reveal much more than traffic to unauthorized Web locations. ETrust can, for example, alert network managers when it finds unauthorized language in e-mails, though the product doesn't block offending traffic.

Our only real problem with WebTrends' Security Analyzer surfaced when we evaluated its notification features. Security Analyzer doesn't make much of an effort to point out potential security threats or violations and doesn't really offer any recommendations for fixing them, much less correcting problems automatically. Its reports are so good, however, that it's easy to surmise problems at a glance. We'd prefer to see problems highlighted, nonetheless.

TripWire 2.1 employs fairly pedestrian notification. It simply sends an e-mail when it encounters a security policy violation.

Usability, installation and documentation

WebTrends' Security Analyzer was extremely simple to navigate. With a straightforward user interface and direct means of scanning IP addresses, it's a no-brainer to conduct a quick scan over a subnet or a sweeping scan over the entire network. Security Analyzer also lets you choose if you want to scan only the most critical security aspects of a server or conduct a full analysis of the server's vulnerability.

BindView's Network Security Suite also had an intuitive and easy-to-navigate GUI. Furthermore, to keep its product current, BindView offers the RapidFire update module, which can automatically update HackerShield through BindView's Web site. This can prevent lag time between the discovery of a new type of security threat and the implementation of a fix.

Security Analyzer's AutoSync feature lets you download security tests developed by third parties from the Security Test Library on WebTrends' Web site.

We were disappointed in TripWire 2.1's basic command-line interface. Originally a Unix-only security system, TripWire was first released as a Windows NT product in April before a GUI was completed. However, the

NetResults

Network Security Suite

BindView Development
(800) 749-8439
www.bindview.com
NOSadmin and HackerShield pricing starts at **$695** per server. NOSAdmin requires BindView EMS Enterprise Console, which starts at **$1,995** per nonconcurrent user.

Pros
- ▲ Excellent scanning and monitoring
- ▲ Easy to use
- ▲ Outstanding update capability

Con
- ▼ Relatively basic policy management capabilities

eTrust Intrusion Protection

Computer Associates
(800) 225-5224
www.platinum.com/products/sysman/security/sessw_ps.htm
Pricing ranges from **$1,945** for 125 concurrent sessions to **$19,435** for an unlimited number of concurrent sessions.

Pros
- ▲ Real-time alerting
- ▲ Excellent business and security policy management

Con
- ▼ None significant

WebTrends Security Analyzer 2.1, Enterprise Edition

WebTrends
(503) 294-7025
www.webtrends.com/products/wsa/default.htm
An unlimited number of IP addresses costs **$4,999.**

Pros
- ▲ Excellent analysis function
- ▲ Easy access to third-party security tests

Con
- ▼ Limited notification

TripWire 2.1

TripWire Security Systems
(503) 223-0280
www.tripwiresecurity.com/prodintro.html
Pricing is **$495** for one to four seats.

Pro
- ▲ Bulletproof internal system security

Cons
- ▼ No GUI
- ▼ Report format somewhat cumbersome

company promises a GUI in the next release, which is due before year-end.

We had no trouble installing any of the products. TripWire 2.1 received the lowest marks because its convoluted installation program kept stalling out on us before it finally decided, for no apparent reason, to work.

Similarly, documentation for all the products was encouragingly detailed and instructive; among the four sets of documentation, BindView's stood out for its ample and well-written manuals.

In the final analysis, BindView's Network Security Suite can provide all the monitoring, analysis and corrective help you need. It is easy to install and use and its functionality is more than adequate.

But the competition is close. For those who must know everything that goes on in their networks, there's nothing better than eTrust Intrusion Protection. WebTrends' Security Analyzer allows incredible flexibility in setting and managing security policies, as well as in monitoring and analyzing the policies' effects. And the NT newcomer, TripWire 2.1, provides fine, thorough security.

Parnell is a telecom consultant and author with more than 18 years of experience in the telecom and data network industries. She has written many articles, columns and product reviews and is the author of four books on telecommunications, telephony and data networking. She can be reached at redreviews@aol.com.

Parnell is also a member of the Network World Test Alliance, a cooperative of the premier reviewers in the network industry. For Test Alliance information, including what it takes to become a member, go to www.nwfusion.com/alliance.

How we did it

We set up a test network consisting of three Windows NT 4.0 servers, five NT Workstation clients and 10 Windows 95 and 98 clients. After installing each of the products and using each to establish a baseline profile of our sample network, we ran scripts that simulated normal network activity: accessing documents, databases and Web sites, as well as sending and receiving e-mail. We then committed two types of security violations on each of the servers: unauthorized resource access and failed or irregular logons, including a brute force attack to gain access to a network resource. After committing these transgressions, we scanned the network again and ran the prepared security reports that each product offered. If the product recommended a correction or fix, we implemented it, then repeated the process. We evaluated each product's management program for alerting and enforcement features, reporting capability and ease of use.

Management Strategies

Career Development, Project Management, Business Justification

Hot network skills

Unix and network integration experience will let you write your own ticket.

BY LISA KOSAN

At some point during the job interview, William Mannion III takes apart the puzzle ball on his desk and offers it to the candidate. "A good troubleshooter can put it back together in a few minutes or less," says Mannion, IT manager at netWork Masters, a consulting firm in Boxborough, Mass.

The puzzle ball — plus Mannion's offbeat question about favorite pets — isn't the typical strategy for landing candidates with top-notch network skills. But these interviewing techniques are indicative of how well someone can adapt to the field's varied demands.

"In this day and age, if you can't think outside the box, you're not going to be able to get a job," he says.

Mannion is hiring a network administrator. He's been flooded with résumés, but he's got a long list of hot skills the prospects better possess. He quizzes candidates on their understanding of virtual private networks, digital subscriber line technology, switched vs. routed networks, and the hardware they're familiar with before delving into network configurations and protocols.

"The ideal person will have cross-network experience," Mannion says. "I want an eagle who knows how to spot trouble before it becomes a problem."

Tony Taglieri knows all about trouble. He's the network and systems manager for Essex County Newspapers, a chain of three community publications north of Boston. Drives go down, backups get corrupted, and still, the paper has to get out every day.

"Nobody knows the effort it takes to make a system run well," Taglieri says. "But they know when something needs to be fixed. And you'll hear about it."

Taglieri has been in his job about 10 years, is a Certified Novell Engineer, Microsoft Certified Professional and knows what's hot — Unix and Linux, and Web integration software. Current favorites of Taglieri's include directory access applications, high-speed Ethernet and anything from Cisco.

But having a résumé loaded with up-to-the-minute skills is only the start. "You need to be able to go back to the desktop and understand how it interacts with the server, whether it's Unix, Microsoft or Lotus," Mannion says.

And while voice over IP garners a lot of buzz, telephony and telecom have to take a back seat at most shops due to a lack of resources — time, money and staff.

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www.nwfusion.com

Carin Stary, a senior technical recruiting agent for Hall Kinion, a San Francisco high-tech recruiter, sees a trend toward hiring network professionals who can handle the heat and articulate a technical vision. "[Companies] want individuals that can communicate well, deal with people, calm them down, go in and analyze a situation," she says.

Unix administrators are sought-after — and scarce — in an NT-dominated market, Stary says. "The ones you do find with heavy NT and Unix skills, I can literally sell their skills right over the phone."

Demand for senior IT executives, including network administrators and engineers, is "overheated," says Charles Pappalardo, managing director of technology and venture practice for Christian & Timbers, a high-tech executive search firm in Cleveland.

"People are being promoted earlier than normal and are being asked to step way up" in their management and interpersonal skills. They also need to stretch their technical capabilities to succeed in the top jobs, Pappalardo says.

The most coveted position in networking tends to be vice president of IT business development, Pappalardo adds. "These people are not only building alliances and partnerships with companies that their companies do business with, but are also doing diligence around technology acquisitions, growing their global networks, and helping implement and integrate network strategies." Essentially, this is the person who is responsible for ensuring the network is on the cutting edge and can interface seamlessly with partner companies.

Do you have what it takes? If you're just coming out of college or a certificate program, please don't go straight for the administration jobs, netWork Masters' Mannion advises.

"Shoot for the help desk," he adds. "In network management, you can't take the textbook and use it. That's not how you do it in real life."

Kosan is a freelance writer and editor in Beverly, Mass. She can be reached at edit@prodigy.net.

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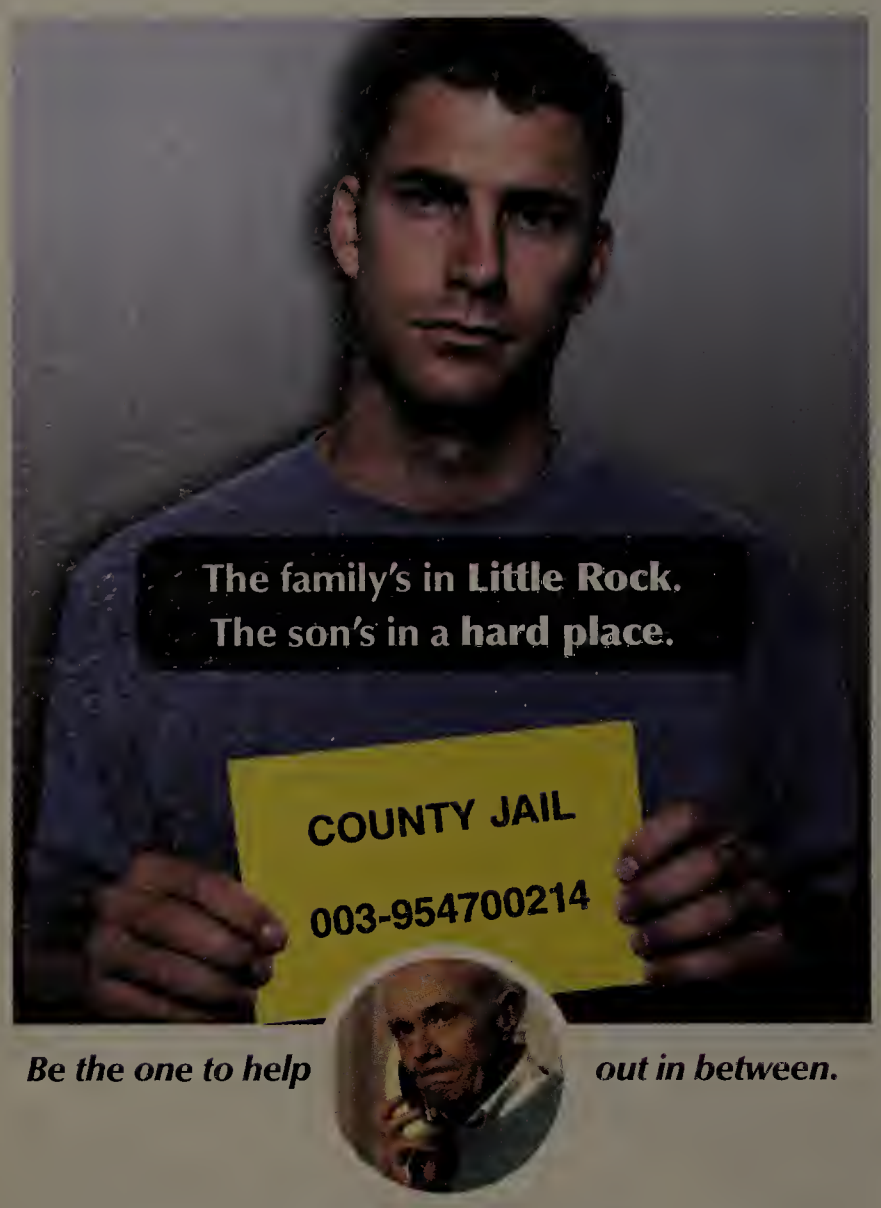

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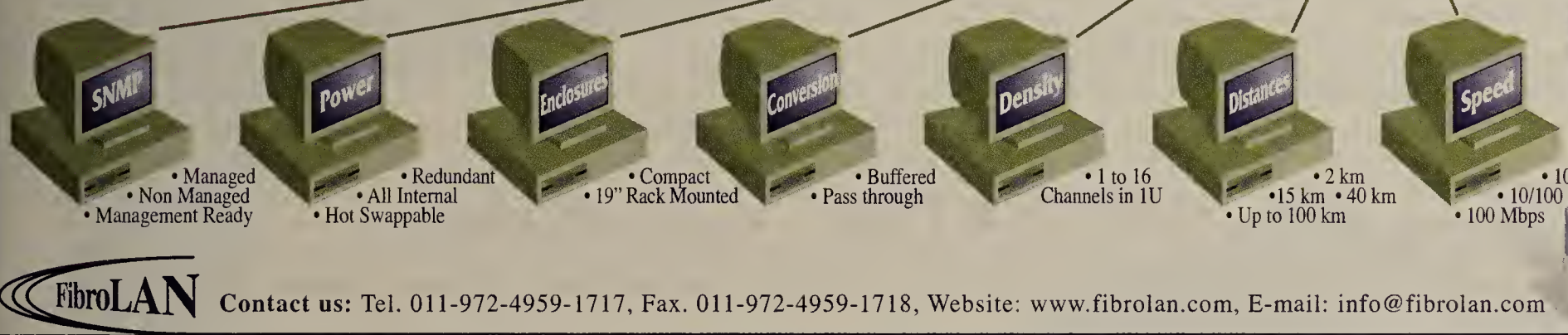

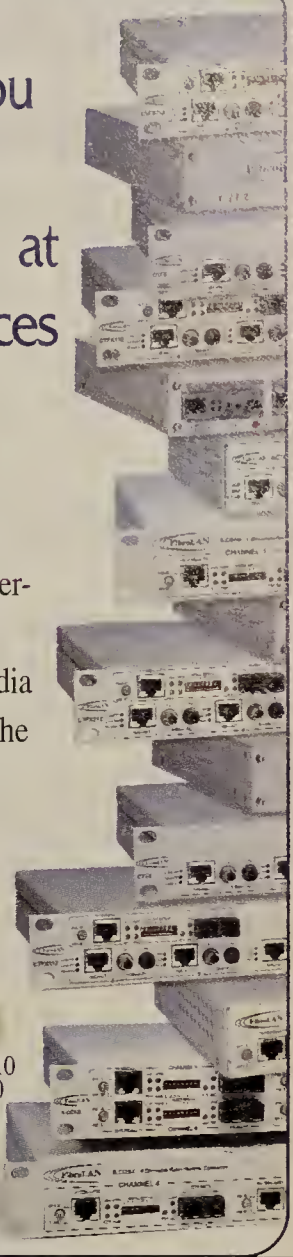

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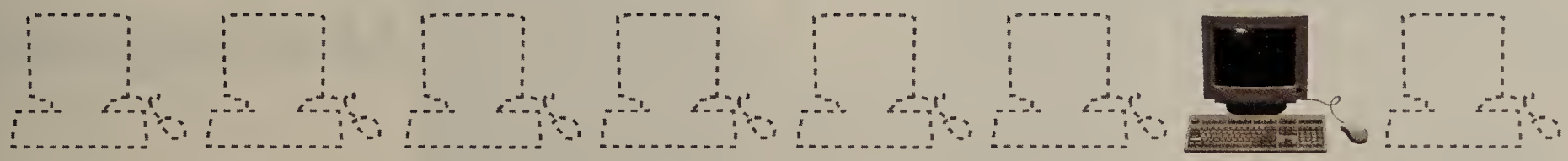

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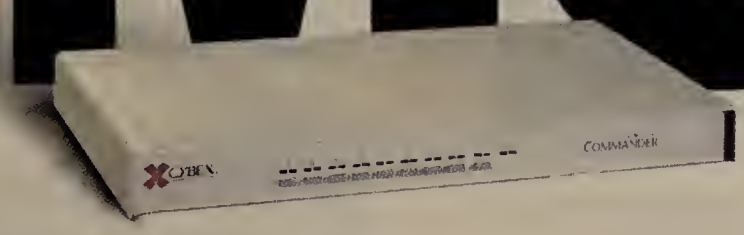

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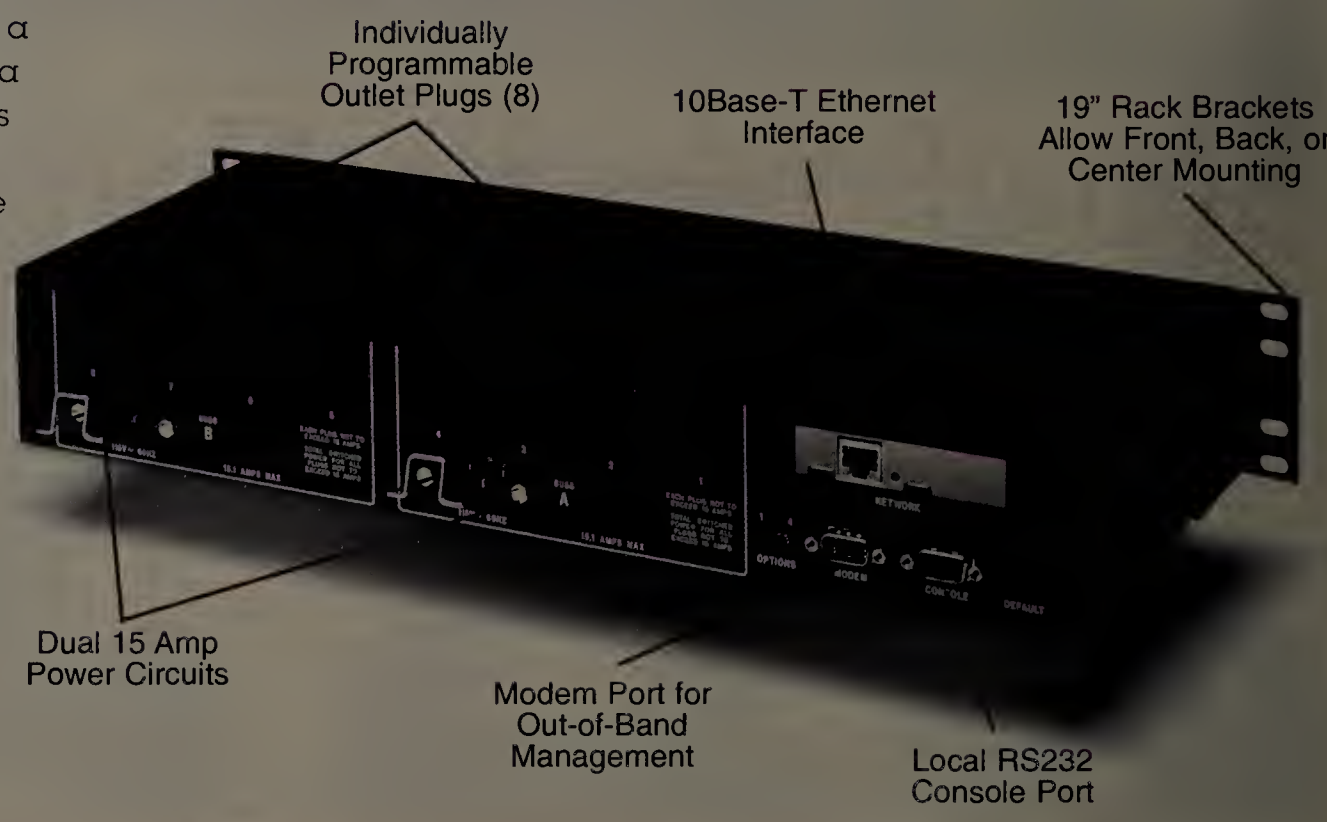

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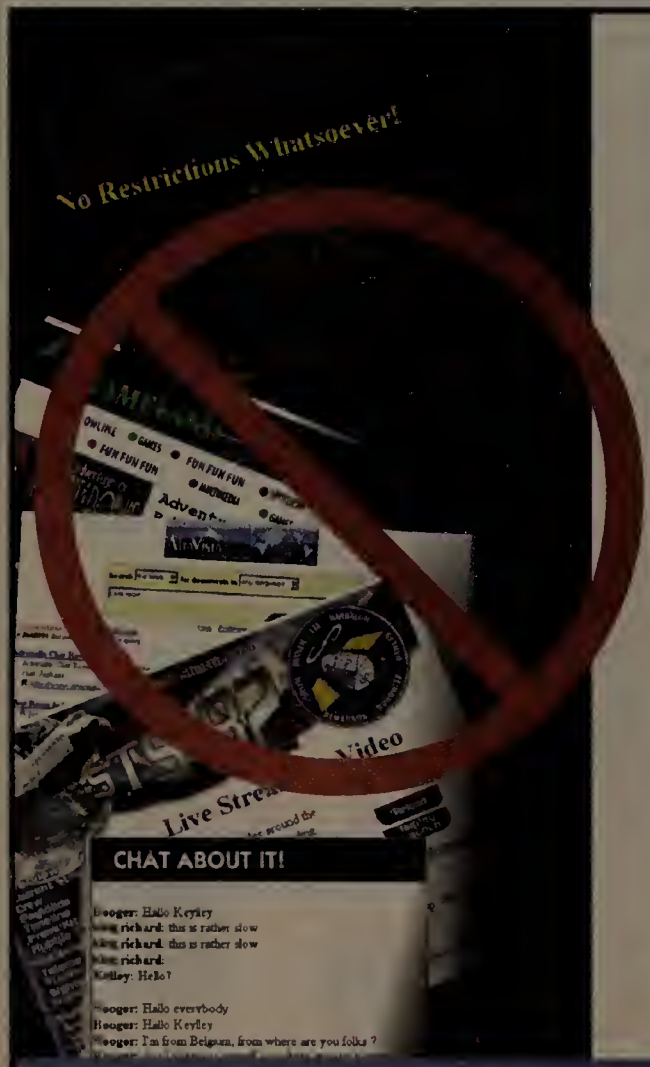

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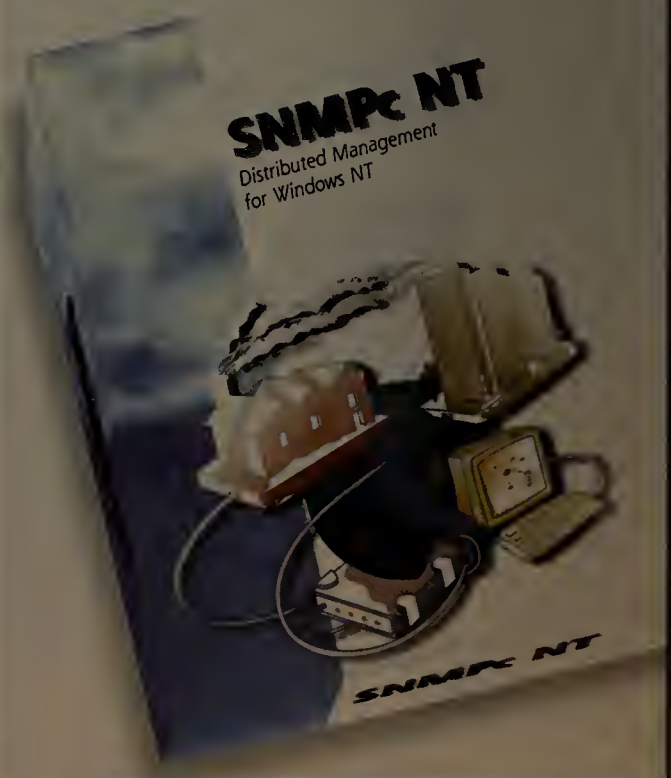

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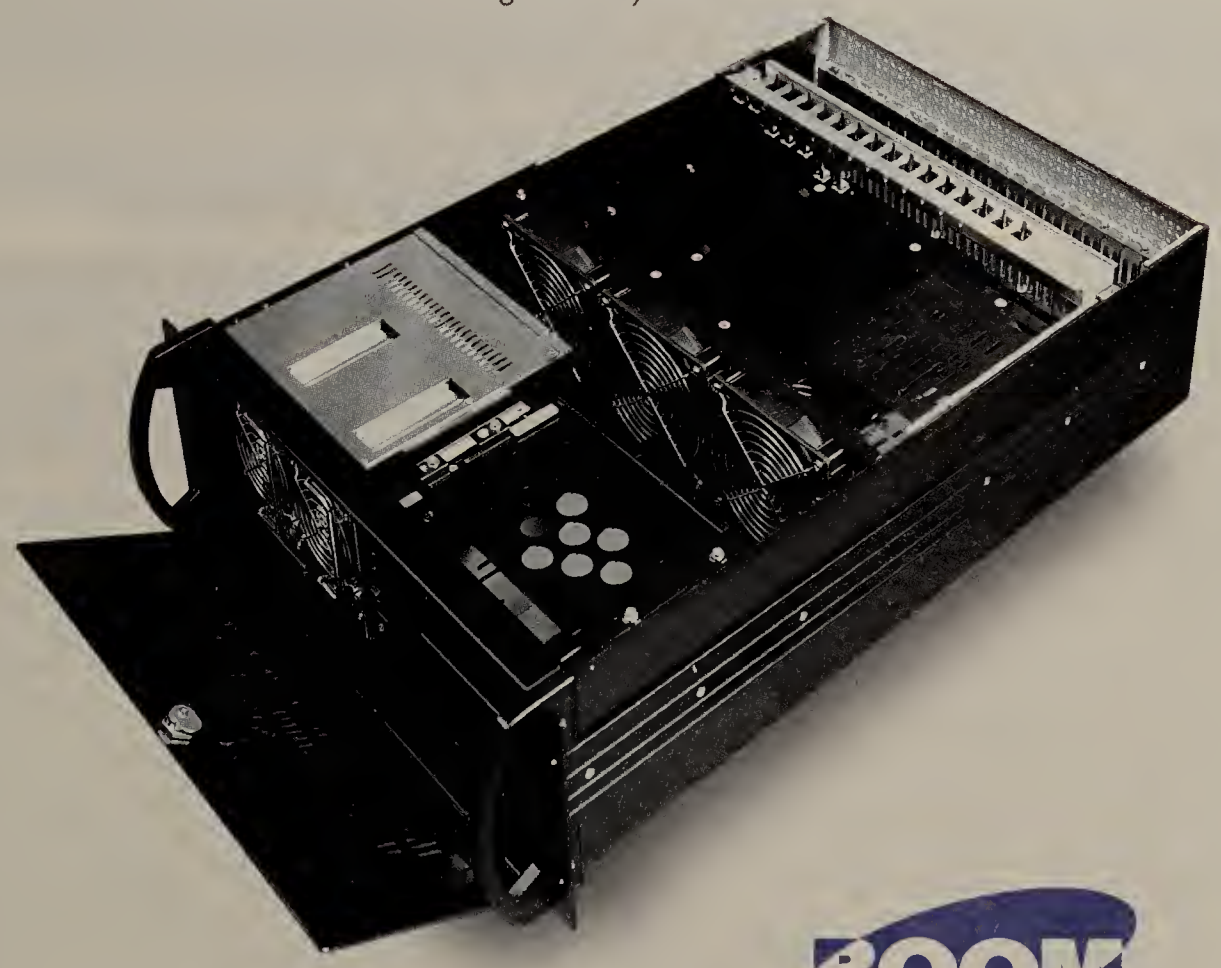

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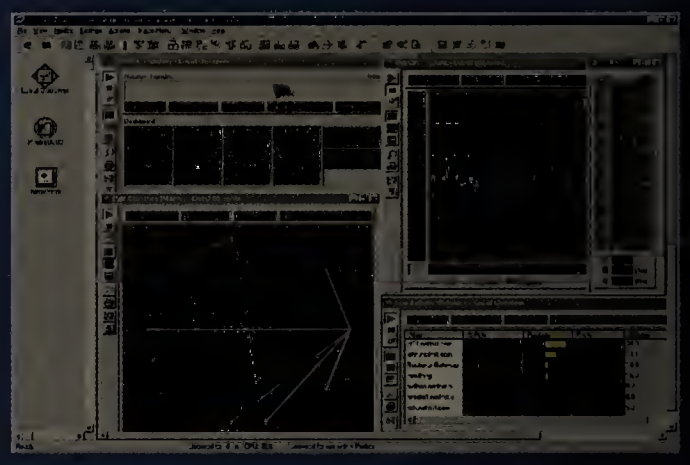

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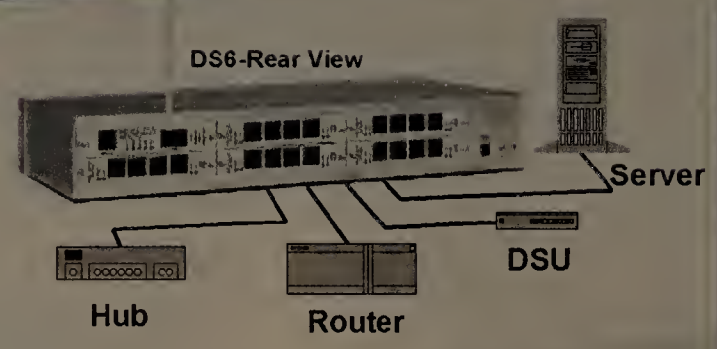

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EDITORIAL INDEX

3Com 10
A
AT&T 31
B
Bell Atlantic 6
BindView Development 61
BMC Software 17,39
C
Cabletron 12
Cerent 6
Check Point 17
Cisco 6,9,14
Computer Associates 61
Corio 31
D
Delano Technology 57
Disappearing 78
DSLnetworks 31
E
Encanto Networks 17
Expand Networks 17
F
FlowWise 10
Future Gate 2
G
Globalware Computing 39
H
Hewlett-Packard 6
I
IBM 9
L
Lucent 14,31
M
MCI WorldCom 31
MicroData Group 39
Microsoft 1,6,8
Mirapoint 39
Monterey Networks 6
N
Netrix 6
Netscape 8
Nortel 6
Novell 6
nQuire 42
O
OpenRoute 6
Oracle 42
P
Perfecto Technologies 15
Prestolite Wire 20
PSINet 31
S
Siemens 10
Sybase 39
T
Toshiba 59
TripWire Security Systems 61
W
WebTrends 61

ADVERTISER INDEX

Advertiser	Reader Service#	Page#	URL
Adtran	76	52	www.adtran.com
Allied Telesyn	71	15	www.alliedtelesyn.com
AOpen America	70	46	www.AOpenUSA.com
Bay Tech	262	72	www.baytechdcd.com
Cable & Wireless	77	40-41	www.cwusa.com
Castle Rock Computing	252	70	www.castlerock.com
Chesapeake	345	73	www.ccci.com
Citrix		35	www.citrix.com
Compaq		7, 18-19, 43, 55	www.compaq.com
Compatible Systems Corp	72	25	www.compatible.com
Concord Communications	78	21	www.concord.com
Cybex Computer Products	227	69	www.cybex.com
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Ecrix Corp		30	www.ecrix.com
FibroLan	359	69	www.fibrolan.com
Gateway	85	32-33	www.gateway.com
HD Systems	228	71	www.boomrack.com
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Network Instruments	290	72	www.networkinstruments.com
Networld Interop		17	www.interop.com/Atlanta
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Heat,
continued from page 1

Server outages that may have happened three years ago are avoided today because of carcful planning, Fortwengler says.

"It's 105 in Las Vegas today," he adds. "If we didn't pay attention to temperature, we'd know about it immediately."

Most IT managers plan for hot days and unexpected weather conditions, but when the heat index hits 115 degrees as it did in Lexington, Ky., earlier this month, surprises will happen. One network professional there, who requests anonymity, began to break out in a sweat — literally and figuratively.

"The temperature in our server room reached 80 degrees at 2:30 p.m., and the only chance we had to keep cool air inside was not to go in and out of the room except when absolutely necessary," he recalls. "We hoped if we could limp by for a few hours, things would take care of themselves that evening."

They did. And he is fortunate in another way, too, as his company is moving to a new building next month where air conditioning with dedicated ductwork has been installed to his specifications. Which speaks to another issue: Despite all the accommodations IT executives make for weather, there are times when they are at the mercy of other factors — most commonly, the property manager.

"In our leased space, we don't have any control over the air conditioning in the building," says Kevin Beattie, director of corporate information services at Nordson Corp. in Westlake, Ohio. "We did have a situation where the sole air-conditioning [unit] in the building stopped over the July 4th weekend." When staff came back after the extended weekend, the temperatures were unacceptably high.

Although the servers were equipped with sensors that shut them down automatically, if the data running on the servers had been for production systems instead of research, "it would have been unsatisfactory," Beattie says. "We would have taken other precautions," he adds.

Network executives report mixed results in haggling with landlords for cooler conditions during lease negotiations. As for the property managers, they say the success of such energy negotiations depends on the company's size, the amount of space it is leasing and the length of its contract.

Trammell Crow, one of the largest commercial real estate services companies in the U.S., rents space to a number of high-tech businesses in Austin, Texas, including eight separate Tivoli locations. Tivoli's offices are cooled on workdays and from 7 a.m. to 1 p.m. on Saturdays as part of the company's standard lease. For evenings, overnights and rest of the weekend, Tivoli pays extra to have its server rooms air-conditioned. Servers outside those rooms remain vulnerable to rising nighttime temperatures.

Most property management firms are beginning to recognize high-tech needs and the costs associated with fulfilling them. The Building Owners and Managers' Association says corporate facilities with computer rooms or data centers have utility expenses 31% higher than those without the features.

Mickey Applebaum, a network consultant with Proactive Network Management in Salt Lake City, has seen networks in companies that don't have dedicated air conditioning. He's developed some innovative and relatively low-tech, low-cost approaches to cooling his customers' computer rooms. Applebaum has gone as far as placing banks of fans inches away from servers to cool them down.

"In most cases, the problem is not that the room is not cold enough, it's that there is no air movement," he says.

Vendors offer some help and advice. Compaq, Dell and Hewlett-Packard have thermal sensors in their servers, which can be monitored by software and shut down in an orderly fashion if heat problems occur.

Compaq subjects its servers to combined temperature/elevation tests to pinpoint their performance. Hewlett-Packard has laboratories where servers are designed to withstand sudden shifts in temperature.

Planning, haggling and perseverance may be important aspects of keeping gear cool during the dead of summer. But sometimes there is no substitute for plain old good fortune.

"Our server room situation worked out pretty easily," says David Jackson, director of corporate systems for MobilStar, a broadband and remote communications company for business travelers in Dallas. "We leased space that was previously occupied by a company that had mainframes. All our servers are located in that room and our temperature stays constant at 68 degrees."

Now that's cool. ◪

Tips for extra server room cooling

- **Install fans to circulate air.**
- **Vent doors to provide for cross-circulation.**
- **Use portable coolers, such as those from Liebert or MovinCool, to reduce temperatures.**
- **Allow proper airflow around servers.**
- **Make server room temperature control part of a disaster recovery plan.**

MovinCool Office is a portable air conditioner that can be programmed to operate when temperatures rise.

Support,
continued from page 1

Dell rolled out E-Support — Direct from Dell, which includes software that lets users troubleshoot and repair systems and applications problems on their computers.

Dell's software, dubbed OpenManage Resolution Assistant, will initially work on non-clustered PowerEdge servers, and eventually on Dell desktop computers. Dell purchased the software and user licenses from Motive Communications, a supply chain automation company. The software lets an organization staff an online help desk, tie in product support knowledgebases specific to its products and distribute troubleshooting software to its customers.

PeopleSoft will announce this week that it will provide customers with similar software to troubleshoot and resolve software problems. Compaq is expected to announce next quarter that it will use Motive's software to automate troubleshooting in desktop PCs and ProLiant servers, according Scott Harmon, CEO of Motive. Compaq declined to comment.

One corporate customer finds the Dell offerings are a useful tool for remote monitoring.

"We are a Dell shop with 16 PowerEdge servers, three in Waco, the remainder in Austin, Texas," says Paul Michaels, a network administrator for ClearSource, a broadband Internet company. "When the Resolution Assistant software detects a problem, it automatically sends an e-mail to Dell technical support, so Dell can fix it."

"Without the software, I would have to drive back and forth from Austin to Waco to manage the equipment," Michaels adds. "Plus the software is always proactively monitoring the equipment and advising me of potential problems before they occur."

The client componcnt can solve almost 30% of the typical problems a user has without the intervention of customer support personnel, Motive claims. With a printing problem, for example, the software automatically identifies and isolates the problem, narrows down the possible causes, and then tests fixcs until the problem is resolved.

The software can reduce the amount of time users spend on calling tech support by identifying the network customers and their configurations, and then proceeding with any initial troubleshooting that can be done automatically.

Dell will also sell Motive's Duet software to companies that want to set up their own help desks. According to Motive, Duet starts at $165,000.

PeopleSoft sees a bright future for e-support products.

"As the level of customer confidence grows in e-support products, we will begin to use the unattended service to automatically fix customer software," says Jim Johnson, e-Support project manager at PeopleSoft. The company, an application provider for human resource management and other operation software, has implemented Motive Duet and combined it with a static support knowledgebase to make diagnosis more comprehensive.

OpenManage Resolution Assistant ships with all new Dell PowerEdge servers or can be downloaded free from www.dell.com/openmanage/resassistant.htm. ◪

Network World, 161 Worcester Road, Framingham, Mass. 01701-9172, (508) 875-6400

Periodicals postage paid at Framingham, Mass., and additional mailing offices. Posted under Canadian International Publication agreement #0385662. *Network World* (ISSN 0887-7661) is published weekly, except for a single combined issue for the last week in December and the first week in January by *Network World*, Inc., 161 Worcester Road, Framingham, Mass. 01701-9172.

Network World is distributed free of charge in the U.S. to qualified management or professionals.

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Backspin

Crazy theories and equivalent values

"We all agree that your theory is crazy, but is it crazy enough?"

— Niels Bohr, physicist (1885-1962)

Last week I discussed the Cluetrain Manifesto (www.cluetrain.com), a somewhat crazy polemic on how corporations don't understand the nature of interacting with people online. And I suggested that in their theorizing, the authors had missed a bigger and far more important issue: the concept of the exchange of equivalent value.

I ended the column with the hope that the authors wouldn't assassinate me, and we can conclude from the fact that you're reading this that no attempts have been made. Yet.

MARK GIBBS

Since then I've had messages from two of the perpetrators, Chris "Rageboy" Locke and David Weinberger, who have both very politely disagreed with me. Interestingly, the perps have a hot publishing deal and *Cluetrain the Book* will be published in the new year. I will await the miniseries and film that will surely follow. But I digress ...

Now I must confess that I did not come up with the concept of the exchange of equivalent value. I first heard the term used by Arnold Seigel, a remarkable philosopher, and I have borrowed and interpreted it — I hope not too liberally.

The idea is that if a transaction between entities (person to person, corporation to corporation, person to corporation or vice versa) is to be satisfactory to both parties, it must be the result of both parties giving and receiving something of value. But most importantly, the things given and received must be perceived as having equivalent value.

For example, I give you my money and you give me a piece of application software. If, when I use the software, it doesn't do what I was led to believe it would or it has too many bugs, then I will feel that it was not a good deal — that my money and your software aren't of equivalent value.

As with all human affairs, there's usually no absolute standard for what is acceptable. Too many bugs to someone else may be acceptable stability to me. For example, let us consider Windows 98 ... no, let's not.

And as long as I'm happy with the exchange of value, as long as I perceive equivalency, then I'm happy about the transaction and I'll be willing to consider future transactions with you.

While the principle of exchange of equivalent value is obvious, many people and organizations just don't consider it, so all over the Internet the principle is being violated.

Last October I discussed NetZero (*NW*, Oct. 19, 1998, page 140). If you want NetZero's service, the firm will ask you for a demographic profile, use your time to install its software, use your disk space, use your processing time to run its software, use your screen real estate to display ads (how NetZero makes its money), and require your attention and interaction with the ads.

In exchange for these very valuable items from you, the company provides you with free Internet access worth roughly $19.95. Is this an exchange of equivalent value? From NetZero's viewpoint it would appear to be, as it is still in business and for a proportion of its users, the same holds true. But go to the newsgroups and e-mail lists, and you'll find an equal number of people who don't think so.

NetZero is a simple case, but a similar analysis of value exchange can be performed for banner ads, electronic newsletters, portals and vendor Web sites. The successes in all categories offer value that is equivalent to whatever the user supplies in some combination of money, attention and time.

If you want to get a clue, pay attention to the exchange of equivalent value and ignore the crazy theories.

Theoretical value to nw column@gibbs.com

'NET BUZZ

The latest on the Internet/intranet industry

PAUL MCNAMARA

Next time Melinda Gates can't come up with the perfect gift idea for **her man Bill** (what a nightmare that must be) she should consider buying him some disappearing ink.

Make that **Disappearing, Inc.**, a San Francisco-based Internet start-up that, had it been part of the Gates collection several years back, just might have spared the Microsoft chairman a spanking from the Department of Justice.

"We make e-mail go away, under the user's control," says **Macien Marvit,** CEO of Disappearing, whose investors include Compaq Chairman **Ben Rosen, Angel Investors LLP** and **Red Rock Ventures.** The e-mail that Marvit's firm "erases" can be any a customer might wish to have disappear, but generally the target is loose-lipped business chatter of the type that increasingly loses lawsuits or puts the world's richest man on the witness stand.

"We can make those e-mails expire off your machine, my machine and all the machines in the middle; the backup tapes, the CDs, all that stuff," Marvit says. "We use encryption in such a way that the message becomes shredded over time."

Details are being guarded at this point, Marvit says, but the essence of Disappearing is that the company will control one of the keys necessary to read an encrypted e-mail message. After a period of time set by the sender or the sender's employer, that key will be destroyed, rendering all copies of the message an unreadable "pile of bits." Even the sender and Disappearing will be unable to resurrect the message once its time has run out. (You can be sure the lawyers will contest that point: "What do you MEAN they can't get it back?")

The system will work with leading e-mail products such as Microsoft Exchange and Outlook, Lotus Notes and Domino, and Sendmail. Disappearing expects to begin beta testing in the fourth quarter and will launch in the first quarter.

Will recipients know that the e-mail they just received carries an expiration date? "That, too, is up to the [sender and/or company policy]," Marvit says. "They can choose to allow you to know or not, but in general, we think that people will know."

One would think so, given that the alternative — erasing e-mail from a person's in-box without his knowledge — would almost certainly be considered rude, even in the cutthroat business world.

What about any paper copies that might be made?

"If I send you an e-mail and you print it, that is what we refer to as 'the saboteur problem,' " Marvit acknowledges. "It is important to understand what problem we solve and what problem we don't solve. We don't prevent people from photographing the screen, and we don't prevent them from printing e-mails."

But the fact that the system isn't foolproof — or idiot-proof — doesn't mean that it won't become a valuable business tool.

"This isn't about being adversarial," says **Marvit's brother Dave,** a Disappearing co-founder. "It's about people who want to communicate with each other privately and not have to worry that sometime hence Ken Starr is going to come along and ask for all the records."

So that gift suggestion goes for you, too, **Hillary.**

As if Web-enabling refrigerators wasn't a silly enough idea, along comes **BP Amoco** with a plan to give motorists Internet access at the gas pump. Its employees won't check your oil anymore without a court order, but BP apparently believes the motoring public is just aching to linger at their neighborhood petrol stations checking online traffic and weather reports.

Don't know about you, but Buzz wishes these fellows would make up their minds about what constitutes good service. First they give us pay-at-the-pump systems designed to speed customers in and out.

Now they want us to hang around and browse the Web?

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CHECK POINT™ Software Technologies Ltd.

Check Point Software Technologies Ltd. is the industry leader in VPNs with more than 21,000 VPN gateways and millions of remote VPN clients deployed worldwide. Check Point's VPN-1 product family tightly integrates the market leading FireWall-1 security suite and advanced VPN technology. Check Point solves the problem of having to define and manage separate policies for network security and VPNs.

For more information, please call (800) 429-4391 or (650) 628-2000 or visit **www.checkpoint.com**

Compatible Systems

Compatible Systems Corporation is the industry leader in hardware-based VPN solutions for site-to-site and remote client connection networking. The IntraPort family of VPN Access Servers provides Internet-based remote client connectivity from 64 to 40,000 simultaneous sessions as well as 16 to 512 LAN-to-LAN connections All IntraPort products feature full IPSec compliance, integrated VPN routing, DES and 3DES encryption and unlimited-user client support for Windows 95, Windows 98, Windows NT, MacOS, Solaris and Linux.
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- Fully managed VPN solutions
- Industry's most comprehensive SLAs
- Highest levels of security & performance

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GTE INTERNETWORKING POWERED BY BBN

VPN Advantage℠ is a managed Virtual Private Network (VPN) service that makes it possible to communicate securely over a private IP backbone, or over the Internet, from virtually anywhere in the world. It enables organizations to leverage the capabilities of a large, shared IP infrastructure while maintaining the "look and feel" of their own private network. And it delivers these capabilities with guaranteed levels of performance and reliability and leading-edge management and monitoring tools.
www.bbn.com/products/vpn.htm

Lucent Technologies Bell Labs Innovations

Lucent Technologies VPNWorX™ offers today's most comprehensive platform for virtual private networking. Visionary in its end-to-end provider/subscriber approach, VPNWorX affords a built-in migration path to fully converged networks, while delivering powerful application-enabling capabilities atop a robust foundation of industry standards.

VPNWorX for your business today and tomorrow…to find out more visit our website at **www.lucent.com** or call (800) 4-LUCENT.

RADGUARD inacom Information Systems

Since 1994, RADGUARD has been a leader in the international data security market. ISO 9000 certified and a pioneer in the development of the IPSec standard, RADGUARD's dedicated hardware-based VPN and network security systems offer comprehensive solutions that are simple to install, transparent to the user, and fully compatible with all IP networks. Inacom, one of the world's largest computer products and technology services companies, can help you design, implement and manage the best VPN solution to meet your business objectives.
www.radguard.com or **www.inacom.com**

SAVVIS a BRIDGE company

SAVVIS Communications Corporation, a leading global Internet and internetworking service provider, offers high-performance networking solutions including DSL, T1, T3 and managed security. The SAVVIS Internet network has been consistently rated #1 for performance and reliability by leading industry analyst Keynote Systems, Inc. Together with its parent company, Bridge Information Systems, the largest provider of financial news and information in North America, SAVVIS provides bundled information services, network security and Internet access solutions.
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Sprint

Sprint is a global communications company — at the forefront of integrating long distance, local and wireless communications services and one of the largest carriers of Internet traffic. Sprint built and operates the United States' first nationwide all-digital, fiber-optic network and is a leader in advanced data communications services. Sprint has $17 billion in annual revenues and serves more than 17 million business and residential customers.

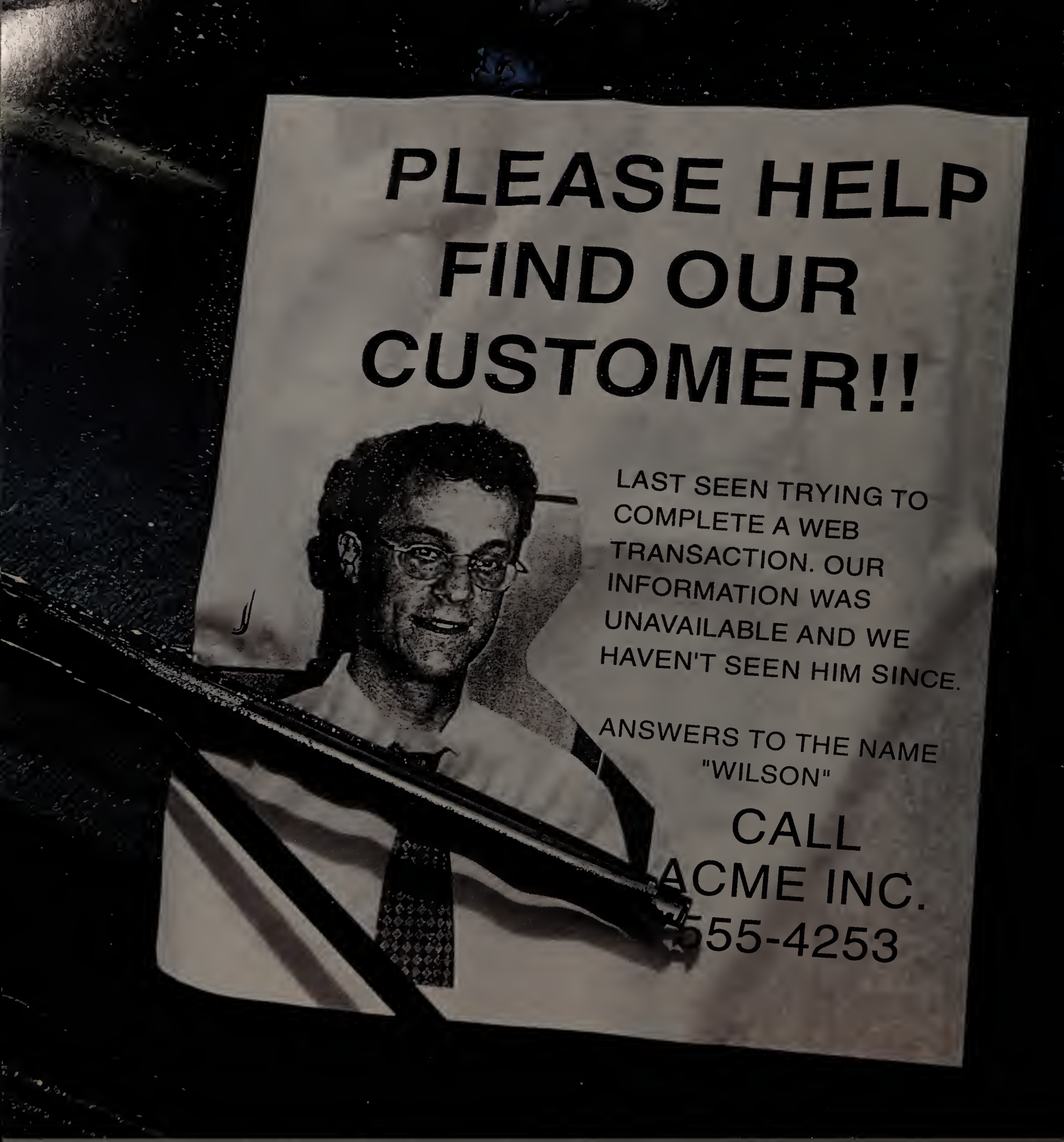
For more information, please go to **www.sprintbiz.com/ip/vpn.html**

TIMESTEP

TimeStep Corporation, a Newbridge affiliate, is the most experienced provider of secure virtual private network (VPN) solutions. Our award-winning PERMIT Enterprise product suite is the most extensible solution for corporate intranets, extranets, and Internet remote access.

For more information please visit our website, **www.timestep.com**.

If you are interested in sponsorship opportunities, please contact Andrea D'Amato at (508) 820-7520 or adamato@nww.com



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